THE JOURNAL of The Department OF AGRICULTURE

VICTORIA · · · AUSTRALIA

Vol. XXXV.—Part 12. DECEMBER, 1937. PRICE, 3D.

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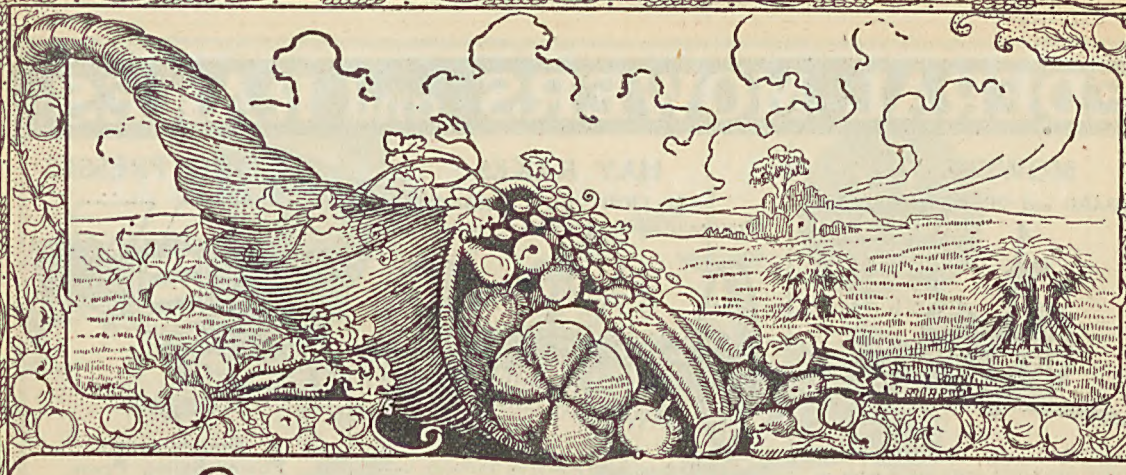

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Issued by direction of the Hon. E. J. Hogan, M.L.A., Minister of Agriculture.

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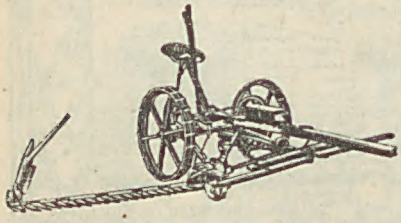

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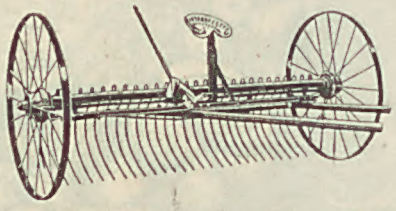

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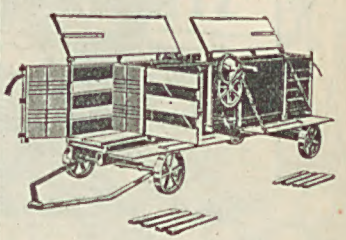

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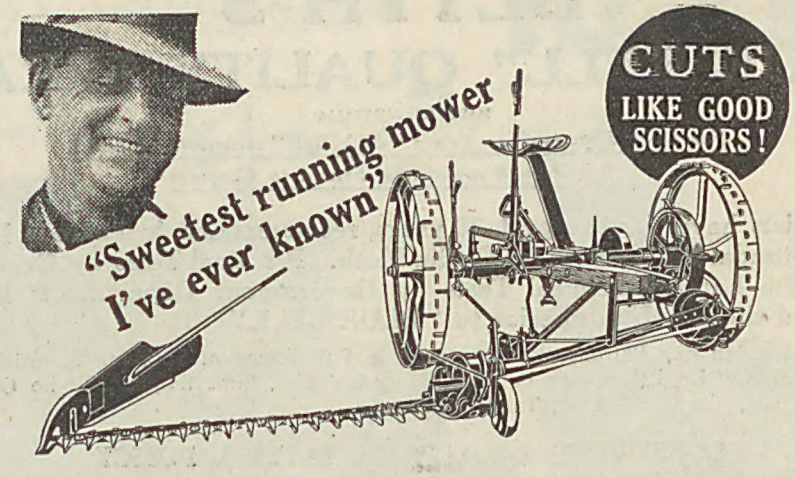

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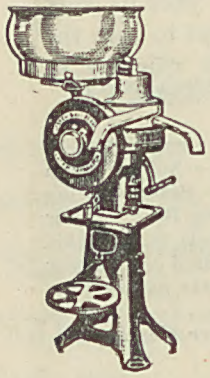

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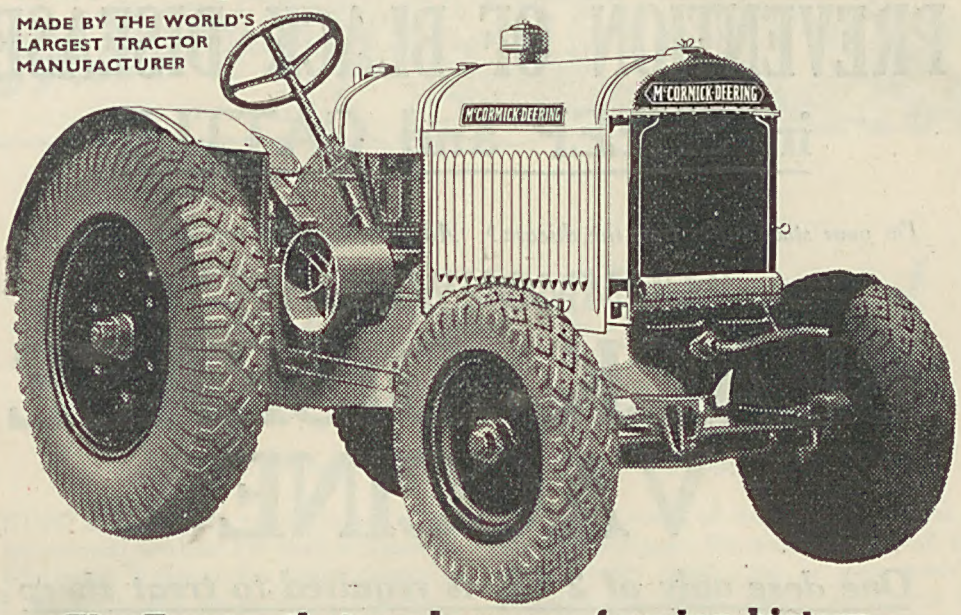

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The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

Oat Varieties Compared

Tests at Mallee Research Station

By W. B. Miller, M.Agr.Sc., Senior Inspector of Agriculture.

DURING the past five years, intensive experimental work at the Mallee Research Station at Walpeup has been productive of much detailed and valuable information, and the interest being taken in these trials was demonstrated by the large number of farmers, estimated at more than 800, that took advantage of the recent field day to inspect the experimental plots there.

Although wheat is the principal crop, very large areas in the Mallee are sown each year to oats, principally on stubble land following wheat, and being used either for hay, grain, or feeding off by sheep, horses, and occasionally cattle. Regarded as a minor crop, oats occupy a larger area than is generally recognized, a fact indicated by the following statistics covering the past ten years in the Mallee districts.

Average area sown to wheat (for grain)	1,595,549 acres
Average area sown to wheat (hay)	33,396 ,,
Total wheat	1,628,945 ,,
Average area sown with oats (hay)	212,848 ,,
Average area sown with oats (grain)	195,848 ,,
Total oats	408,696 ,,

The proportions of the oat crop which are cut for hay, stripped for grain, or fed off by stock, vary greatly from year to year according to seasonal conditions, but it is known that increasing areas have been sown during the past seven years, with the object of providing feed for sheep during the winter and early spring. A feature of the recent Field Day was the great interest taken in the various investigations with oats at the Station, the commonest questions being "What is the best general purpose oat variety?" "Are the early maturing types satisfactory every year?" "What are the characteristics of Dawn oats?" The investigations with oats at the Research Station, during the past six years, provide reliable answers to these questions. Seven named varieties of oats have been tested for six years, the three types, classified according to the order in which they mature, being:—

Early maturing ..	Mulga, Belar.
Mid-season ..	Gidgee, Guyra, Dawn.
Late ..	Lachlan, Algerian.

Each variety was included in the hay (six years) and grain (four years) trials, and Algerian, Dawn, and Mulga in the grazing tests for the past three years. The plots were sown on stubble land for five years, and on fallow one year.

The 1937 crops were harvested early in November and the results, together with the

Visitors inspecting the experimental plots on field day.

average figures for the period of the test, are given in the accompanying table:—

Variety.	Yield, 1937.	Hay. Average Yield, Six Years.	Grain. Average Yield, Four Years.
	cwt. per acre.	cwt. per acre.	bush. per acre.
Dawn ..	15·3	25·9	17·1
Guyra ..	17·5	25·7	17·2
Lachlan ..	14·0	24·7	15·4
Mulga ..	13·4	24·3	17·7
Gidgee ..	14·6	24·0	13·7
Algerian ..	15·3	23·8	17·4
Belar ..	12·6	22·5	14·7

In the hay trials, the mid-season varieties, Guyra and Dawn, have given the greatest returns. It was found that Dawn did not head the yields in any one of the six years, as the early varieties, Mulgar and Belar, were superior in seasons when the late spring rains failed, and conversely, the latest maturing variety, Algerian, responded best to good rains in October, particularly when the early spring rains of September were light or missing. As the October rainfall exceeded the average in four of the past six years, and the September rains only reached the average once, the performance of the early and mid-season varieties is all the more significant. Guyra and Dawn are very similar types, but Dawn appears to be slightly superior in these trials, this opinion being confirmed by trials at other centres. In the Mallee, an early maturing type like Mulga often matures three weeks before Algerian, and may be in the stack before the latter is ready to cut.

Results of the Grazing Trials.

To compare the amount of grazing provided by the three principal varieties when sown on stubble land, without manure, for grazing throughout the season, a comprehensive test has been conducted during the past three years. Three 1-acre plots of each variety were sown with the combine in April, the feed produced being fed off throughout the growing period by sheep grazing on one plot of each variety simultaneously, and then moving to the second and third series in rotation. The number of sheep used at each grazing was adjusted to the feed available, and a record kept of the number of sheep-days (number of sheep multiplied by days of grazing) for each plot of each variety. The dates and times of grazing vary with the seasonal conditions, but each

A group of visitors listening to aa address by an officer of the Department.

plot was grazed four times from July to November, in 1935 and 1937, and five times in 1936. Tabulated below are the summarized results for the three years, the figures representing the average number of sheep-days per acre for each year in the period July to November.

SHEEP DAYS OF GRAZING 1935-36-37.

Variety.	Type.	1st Grazing.	2nd Grazing.	3rd Grazing.	4th Grazing.	5th Grazing.	Total.
Mulga ..	Early ...	101	118	122	56	43	412
Dawn ..	Mid-season	97	142	140	87	55	484
Algerian	Late ..	78	121	133	89	60	440

The figures demonstrate very clearly that most feed at the first feeding-off in July, was provided by the early maturing type, Mulga, but that Dawn, the mid-season type, was very little behind, and excelled in the August and September grazings. The late maturing type, Algerian, gave the greatest quantities of feed in the late grazings, as it responded most to the late spring rains.

In a normal year the value of the feed is greatest in the winter, but green feed in November, after the native grasses have gone to seed, is very useful for late lambs. Considering the feed produced throughout the season, Dawn gave 10 per cent. more, and Mulga 6 per cent. less than Algerian.

Oat variety grazing trials—Left, ungrazed; right, grazed.

Rate of Seeding Tests.

The above trials were sown at approximately 50-lb. of seed per acre, but, as grain sizes differ very markedly in oats, the rates of seeding were adjusted so that equal numbers of seed per acre were sown in each case. In the past, it has been considered that, under Mallee conditions, oats should not be sown heavier than 50-lb. per acre, but investigations at the Research Station, during the past five seasons, indicate that the heavier sowings, up to 70-lb. per acre, have given slightly greater yields of both hay and grain, and other detailed studies have proved that, as might be expected, much more feed is given by the heavier sowings when it is desired to feed off the crop.

RATE OF SEEDING TESTS (ON STUBBLE LAND).

Rate of Sowing.	Hay. Average, Five Years.	Grain. Average, Three Years.
lb. per acre.	cwt. per acre.	bush. per acre.
30	21·4	14·3
50	22·0	15·4
70	23·3	15·8

From the above, it is seen that oats grown with the object of feeding-off should be sown thicker than normal, and that, if the season turns out to be so favourable that grazing of the oat crop is unnecessary, no loss, and probably a gain, will result from the heavier seeding. Because of the upright early growth and sparse stooling habits of the early and mid-seasoned varieties, it is natural to consider that they should be sown considerably heavier than Algerian. Tests have not substantiated this belief, as it has been found that Algerian responds to heavier seeding in much the same way as Mulga.

Experiments have been carried out also to determine how the various types recover from a winter grazing, if then left ungrazed to produce a crop. It has been found that the early maturing varieties when grazed out once in the winter, had their grain yield reduced by approximately 30 per cent., and 50 per cent.

Cutting a two-ton crop of Dawn oats.

when grazed twice, as compared with the yields of the same varieties ungrazed. The yields of the later maturing types were not so seriously reduced as the result of feeding off the crop, but this effect depends so much on the incidence of the spring rains that one can say little more than that early maturing types can not be grazed as late as Algerian if equivalent hay or grain crops are desired.

The above brief description of the experimental work with named oat varieties (many new crossbreds are under test also) at the Mallee Research Station, should leave little doubt that early and mid-season maturing types have a definite value under Mallee conditions. In seasons characterized by a dry late spring, they produce much more hay than the standard variety, Algerian, and in more favourable years when there is much hay to be handled and conserved, they make possible an early start with harvesting operations, so reducing the risk of loss as the result of stormy or wet weather. The quality of the hay and grain produced by them is quite satisfactory for farm use, and, as forage for sheep, they can be exploited according to the conditions existing on each farm.

In 1936, the Algerian variety was sown on approximately 90 per cent. of the area sown to oats in the Mallee, the remaining 10 per cent. being comprised chiefly of Mulga and other early maturing types.

It is recommended that, in the Northern Mallee, the oats sown should consist principally of early and mid-season varieties and that, in the Southern Mallee, at least 40 per cent. of the area should be sown to either an early or mid-season variety.

One of the greatest obstacles to the attainment of this objective is the paucity of seed supplies, but the Department of Agriculture will have limited supplies of Dawn and Mulga seed oats available for distribution early next year. It is expected that the Dawn variety, which is a special selection made from the older variety, Sunrise, by Mr. G. S. Gordon, at the Research Farm, Werribee, will play an important part in the farming methods of Mallee wheatgrowers.

A summary of the work conducted at Walpeup is available free in booklet form on application to the Director, Department of Agriculture, Melbourne, C.2.

Nut Culture and Production in Victoria

By Edward E. Pescott, F.L.S., Senior Horticultural Instructor.

An article on varieties, stocks, pollination, general culture, pruning, and harvesting of the almond appeared in the November issue of this Journal.

THE CHESTNUT.

(*Castanea sativa.*)

IN Victoria there are, approximately, 1,000 commercial chestnut trees, practically all of which are seedlings. Very many of these trees have been planted for shelter and for ornamental purposes, and quite often the fruits drop on the ground and quickly decay.

There is a certain market for chestnuts in the cities, but apparently a limited one. At the same time, the value of chestnuts as food should not be lost sight of, especially when in older countries of the world such a commodity as chestnut flour is a staple article of diet. Roast chestnuts have, of course, been well known for centuries.

The chestnut, as a genus, occurs in many countries of the Northern Hemisphere; North America, Europe, Asia Minor, and Japan all contributing species. The native American chestnuts are known as Chinquapin. The chestnut commonly grown is variously known as English, European, or Spanish. This is often called the "true" chestnut, and its botanical name is *Castanea sativa.* American species are *Castanea dentata* and *Castanea pumila*, while the Japanese species is *Castanea Japonica.*

Grown as seedlings, chestnut trees take many years to come into bearing. Possibly a period of up to eighteen years may elapse before nuts are produced. An American variety known as Paragon is commonly grown in that country, and it is grown as a worked tree. The usual method of grafting is by the ordinary tongue or whip-tongue graft, working the wood from

Spanish chestnut trees—more than 60 years old—at Stanley, Victoria.

the named variety on to a young and vigorous seedling. Such worked trees come into full bearing in six or seven years.

The chestnut is a fairly quick grower, and the trees quickly assume a wide spread. If a chestnut grove is being planted, or if the trees are to be grown for avenue or for shelter purposes, they should not be planted any closer

Spanish chestnuts.

than 40 feet apart. Being a deep-rooting tree, the chestnut should be planted in a deep soil of good quality. Drainage is an essential. The trees thrive best in a good rainfall district, which is free of, or sheltered from, hot north winds.

The foliage is very tender; it burns seriously if the roots become dry, or if a hot north wind prevails. The leafage is very abundant, and, falling on the ground, it finally forms a good mat of leaf mould which is much relished by the roots. The favoured localities in Victoria are in the mountain country in the centre, and in the north-east and south-east.

Other Chestnuts.

There are several plants bearing the name of chestnut. The Moreton Bay chestnut, *Castanospermum australe,* is a tall, wide-spreading tree, a native to Queensland, which bears bunches of large ornamental orange-red flowers. These are followed by large seed pods; the enclosed seeds may be eaten when roasted. If eaten uncooked, the seeds cause stomach trouble, which often is followed by serious illness.

The Cape chestnut, *Calodendron Capense,* is a tall spreading tree, native to South Africa. It bears very large, handsome bunches of pink flowers in early summer. The fruits are like small black chestnuts, and the seeds are inedible.

The Horse chestnut, *Aesculus hippocastanum,* is a native of the temperate regions of Europe and Asia. There is also a North American species. The Horse chestnut is a wide-spreading tree of bold foliage and beautiful pink flowers which are borne in spring. The seeds are bitter and inedible unless cooked; even then they are not very palatable. In Southern Europe they are often ground and used as a substitute for coffee.

The Water chestnut, *Trapa natans,* is a strange-looking nut, also known as the Jesuit nut, Trapa nut, or Water Caltrops. The "nut" is black, and has a blunt horn-like projection at each end. It is grown in mud in running water, the plants forming a thick mat in the water. It is cultivated extensively in China, where it is a popular article of diet. The nuts, when boiled, taste like new cheese. *Elcocharis tuberosa,* another Water chestnut, is a rush-like, pond-growing species, which produces edible and sweetly-flavoured tubers on the roots. It is a native of China and the East Indies.

Many other trees and smaller plants, which produce large or medium-sized seeds or nuts, and which are eaten in various ways, are often designated locally as chestnuts, mainly because the seeds, nuts, or roots have a flavour somewhat reminiscent of the chestnut.

HAZEL AND FILBERT NUTS.

The hazel and filbert nuts belong to the temperate climes, having a geographical range through America, Europe, and Asia. The common hazel is *Corylus avellana;* the American species are *Corylus Americana* and *Corylus rostrata;* the Asian species are *Corylus heterophylla* and *Corylus ferox; Corylus Colurna,* usually known as the Constantinople hazel, occurs also in various countries in Asia; while *Corylus tubulosa,* Lambert's nut, is found in Asia Minor and Southern Europe.

Common names can be confusing; thus for this group of nuts we have such names as Hazel, Cob, Filbert, Lombardy, Lambert, Barcelona, and Monkey nuts. The trees are all hazel trees, this being the common name for the genus. Nuts with husks as long as, or longer than, the nuts themselves are called filberts, while those having husks shorter than the nuts are simply called nuts, hazels, or cobs. All the nuts in the illustration are filberts. Lombardy is a district name, and Lambert a personal one. Barcelona is simply a name given to the nuts coming from that town in Spain, while the origin of "Monkey nut" is obvious. *Corylus avellana,* the common hazel,

Filbert nuts, showing the varying length of husks.

and *Corylus tubulosa,* Lambert's filbert, and their many varieties are the nuts commercially grown.

Soils and Districts.

The most suitable soil for hazel nuts is one of a good quality, which is well drained. Hill locations seem to be preferred to flat or level country. A stony soil is no detriment, provided that the soil itself is of a good type. The plants prefer a clay soil to a sandy one, but the clay must not be too stiff, and the overlying loam should be a good one. In Kent, England, the hazel thrives remarkably well in limestone country, where the bushes grow from 12 to 30 feet in height.

In Victoria, the successful culture of hazels seems to be confined to the cooler areas. They make successful and productive growth in the Dandenong Ranges, Gippsland, Macedon, the Beech and Otway Forests, and the hill and mountain country in the North-East. At the present time Wandiligong, near Bright, is the centre of production. In the early days of the State, hazels were very successfully grown near Melbourne, and a very tall and productive hedge at Wattle Park is still remembered.

In Europe, hazels are frequently grown as hedges; but this practice is not recommended here, if the plants are to be grown for nut production. Cultivation on all sides is essential, and this is not possible if the bushes are grown as a hedge.

Propagation.

All new varieties and hybrids are raised from seeds. Seedlings are very easily produced, but usually they are not productive, nor do they carry superior nuts. Indeed, there are

An upright hazel-filbert tree, showing suckering habit.

comparatively few named varieties in nursery lists, so that new hybrid seedlings, producing nuts of a satisfactory character, are rare.

New plants are readily produced from cuttings made from the previous year's wood, and set out in autumn. Cuttings root very freely in moist sand, especially if they are planted with 3 or 4 inches into the sand. In twelve months' time these rooted cuttings may be transferred to the nursery beds or to their places in the grove. Raising cuttings for fruiting trees is a somewhat slow process, and a young tree raised from suckers comes more quickly to fruiting age. The production of plants from cuttings is usually carried out only where these cuttings are to be used for stock purposes.

Where worked trees are required, cuttings of the Constantinople (*Corylus Colurna*) are used. The main purpose of producing worked trees is to provide standard or tall standard bushes. Such a method is practically unknown in Australia. However, it is used abroad for standards, and for the working of rare species or varieties. Rooted cuttings may be budded or grafted. Budding by the T-shaped cut and grafting by the whip-tongue method readily "take" on the stock.

For general increase of plants the removal and planting of the suckers, side shoots, or sprouts is the recognized method. Such plants are quite as fruitful as the parent bushes; they come true to type, and they fruit in a very few years, if the bushes are well cared for, by cultivation especially. Strong growing stools should be selected in autumn or winter and planted out in nursery rows. If well cared for these will be ready for planting out during the next winter. Strong crowns may be broken up and planted direct into their position in the grove.

Showing a hazel-filbert tree developed on a single stem.

A spreading hazel-filbert. Note the suckering habit.

Management in the Grove.

Hazel bushes produce an abundance of basal shoots, which are usually called suckers. The bushes become very dense, and much energy of the plant is directed towards the maintenance of these weak sucker masses, rather than to the production of the nuts.

In many European countries, the tendency is to confine the plant to one strong main stem, forming a headed tree like any normal fruit tree. In most cases, however, the line of least resistance is followed, and bushes, with many stems and shoots, are allowed to develop. It is unwise to allow too many of these suckers to remain. All of the weak, thin ones should be removed each winter, allowing the bush to have up to a dozen strong stems, according to the vigour of the variety and the character of the soil. The more the tree-like character of the plants, the more productive they will be.

Hazel-filbert bushes in foliage.

Planting.

Planting is done during the winter, after the soil has been well subsoiled and prepared. Wet soils, or soils at all retentive of moisture, should be tile drained.

The distance between the trees is frequently a matter of soil and tree vigour. It is, however, not necessary to adopt a wide-spacing method. A distance of 10 to 14 feet apart each way is the recognized arrangement for planting.

Pruning.

Little pruning is necessary; at the same time the bushes should not be allowed to grow untouched for years. As the flower buds are developed each year, care should be taken that during the winter pruning none of these are removed. Pruning should be confined to removal of all unnecessary suckers, thinning out weak stems from the centre of the bushes so as to allow a free admission of light, and the cutting away of the many weak and thin non-fruiting laterals that are produced.

Floral Development.

The hazel produces unisexual flowers, the staminate (male) blossoms being produced in long catkins, which carry the pollen and which thus provide pollination for the female or nut-producing flowers. These are the small star-like blossoms which produce a number of scarlet thread-like stigmas, and are known as the pistillate (female) flowers.

The flowers usually come on the ends of the growths and on laterals, all of which have been produced during the previous summer. Sometimes the pistillate blossoms develop later than the staminate, and on that account it is always wise to grow two or more varieties to ensure satisfactory pollination; or if possible, definitely known forms of hazel and filbert should be interplanted for good nut production.

Harvesting.

The nuts must be left on the bushes until they are quite ripe, when the husk becomes very harsh and brittle and the nuts develop a rich brown colour. Usually the best plan is to allow the nuts to drop to the ground, or to jar the trees sufficiently as to cause them to fall readily. They are then gathered and air-dried in well-ventilated rooms. Mould very quickly sets in, if the nuts are at all damp.

Catkins or male flowers of the hazel-filbert.

Overseas growers often fumigate the nuts with sulphur fumes, to kill any spores of mould that may be present. Others store the nuts in casks, lightly sprinkling them with salt. In this country, however, hazel nut production is not at all extensive, and up to the present the nuts are sold almost as soon as they are harvested.

Varieties.

Very few varieties are listed in Australia. The following have been advertised in various catalogues:—Bergeri, Cosford De Provence, Du Piemont, Downton, Imperiale de Trebizonde, Mervielle de Bolwiller, Red Filbert, and five varieties all bearing the name of "Webbs Prize"—viz., Cobb, Daviana, Exhibition, Red Skinned, and White Skinned. There is also a purple leaved hazel which is a tender foliage variety, grown only as an ornamental shrub in sheltered gardens.

Cosford is one of the oldest varieties. It is thin shelled and of very good quality. The bushes are good bearers. All of the Webb types are good producers, and they give good quality nuts. Downton gives very large, almost square-shaped nut of high quality.

THE MACADAMIA NUT.

The Macadamia nut is one of the few Australian native food plants that has as yet been developed into economic and commercial use. It enjoys several common names, such as the Queensland Nut, Australian Nut, Bush Nut, Poplar, Popple or Bauple Nut. There seems to be no reason why the generic name of Macadamia should not be adopted as a common name for this nut. It was so named by Baron von Mueller after Dr. John Macadam, President of the Philosophical Society of Victoria. But if another name be required then Bauple Nut is the more suitable, for it is in the Bauple Ranges in Queensland that the trees grow in forest numbers.

The tree attains to a height of 60 feet in the forest, but such trees must be of great age. It occurs in the rain forests of south-eastern Queensland and north-eastern New South Wales. Although it is thus semi-tropical the tree thrives and produces good nuts as far south as Melbourne.

Up to the present very little attention has been paid, in Australia, to the culture of this nut-bearing tree, and commercial supplies come mostly from the forest trees, the nuts being collected from the ground in early winter by residents in the localities in which the trees occur. More attention has been given to its culture in the United States of America and Hawaii. Trees were introduced into the latter country in 1892. These first fruited in 1898. Very considerable plantings are now in existence in that country.

The tree is evergreen, with firm shining green leaves with a wavy edge. It belongs to the family of Proteaceae. The flowers are

A bunch of Queensland or Macadamia nuts.

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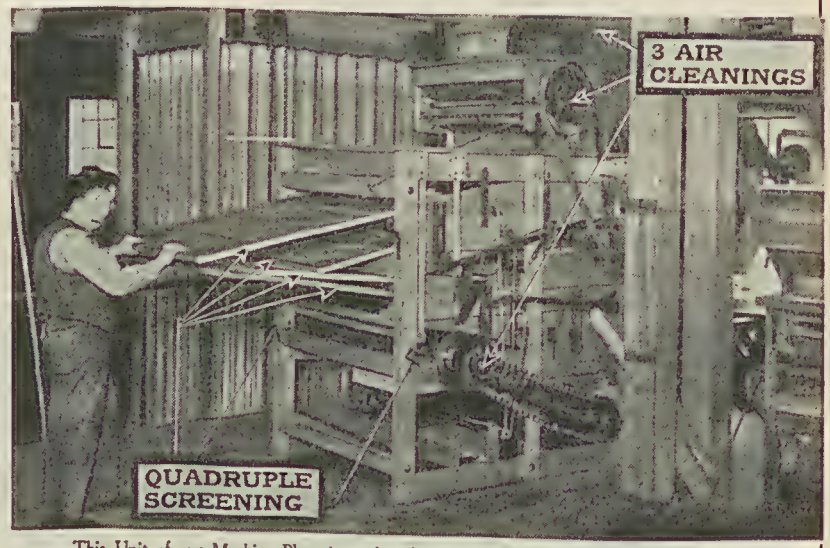

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small and white, and are carried on a long raceme about six or eight inches long. The tree usually flowers in summer, but late flowering stems are often seen in early winter.

The nuts take about six months to develop. They are borne in bunches sometimes up to sixteen in number, as in the illustration, but the average number would be about five. They are about an inch in diameter and the shell is both thick and very hard. It takes a good blow with the hammer, the nuts resting on a solid base, to crack the shell. Even with this disability, there can be no doubt that the flavour of the nut is exceedingly good, and that it is one of the best-flavoured nuts that the world produces.

Some years ago, residents in the north-east of New South Wales located some trees with a shell of very much thinner texture than the normal type. These thin-shelled varieties are being grown both in Australia and America at the present time. The timber of large specimens is distinctly ornamental and useful for cabinet work. The foliage contains a small amount of prussic acid.

Soils.

Macadamia nut trees will not respond either to growth or production in a poor soil, and, like many Proteaceae, being deep-rooted, the soil must also be deep. Good moisture conditions are also necessary, particularly in summer and autumn, when the nuts are being produced.

Propagation.

The usual method of reproduction is the production of seedlings from the nuts. The nuts are sown either in nursery beds, or in places where the trees are to be grown. Seedlings develop very quickly and in a year or two fine young trees are produced. Current season's nuts are to be preferred for sowing. The nuts germinate very quickly; and it has frequently been found that the immature nuts germinate very well. Nuts have been sown still within the cracking husk; and in a few weeks, seedlings several inches in height have developed.

Trees raised from thin-shelled nuts do not always give thin-shelled progeny, although there is always a fair percentage of plants which will produce nuts of the thin-shelled type.

Hawaiian and American experiences have shown that young seedling plants can be used as stock, and that vegetative propagation by various methods can be successfully carried out.

Cuttings planted deeply in a thoroughly drained soil, which contains much organic matter, have rooted in from three to five months at a regular temperature of between 65 deg. and 70 deg. F. The cuttings were rather long, and under half an inch in diameter. Inarching and layering, and particularly aerial layering have proved successful.

Several types of grafting were successful, but the best results obtained were by side grafts inserted into the seedlings by the use of the whip-tongue method. A short sturdy scion about six inches long is prepared at one end as for the whip-tongue graft. A similar whip-tongue opening is cut at the side of the seedling stock, a few inches above ground. The scion is then fitted into the side of the stock, tied with raffia, and sealed with grafting wax. When the scions have united, and have commenced to make leaves, the top of the seedling stock should be cut off just above the union. This will probably be about a month or six weeks after grafting.

Harvesting.

The trees, if well grown, commence to bear a few nuts at from five to seven years old. Subsequently the crop increases with the growth and age of the tree. No Australian estimates are available as to the yield of individual trees. Well-developed trees should produce up to the standard of walnut trees; so that 100 pounds of nuts could be expected if the trees were well tended and if soil and climate were suitable.

The nuts are gathered from the ground as they fall, and are then air-dried. Their flavour is not well developed until a few weeks after harvesting. It would appear that the kernels require to be ripened after the nuts drop from the trees.

In America an electrically operated machine has been invented for the purpose of cracking these nuts, and it is estimated that the machine will crack up to 1,000 nuts per hour. A second machine has been prepared which is reported to crack 150 nuts per minute or 9,000 per hour.

Diseases.

At present neither insect nor fungous disease has been recorded as injuring or damaging Macadamia trees. The only pest

noted as doing any damage is the grey squirrel. This dainty little animal will visit the trees and with his very sharp teeth, soon cut through the solid coat of the nut. But as squirrels are, in Australia, purely town dwellers, they are not likely to cause trouble in country nut-growing areas.

Other Varieties.

There are several other species of Macadamia, as well as of the allied genus of *Helicia*, all of which produce nuts, some of which are larger and some smaller than *M. ternifolia*. One species, *M. Whelani*, produces nuts over two inches in diameter, but the kernel contains prussic acid. Most of the trees of the genus *Helicia* produce either red or blue coloured fruits, with the nut inside the husk. Owing to the suspected presence of poison these nuts are also on the danger list.

A complete peanut plant showing habit of production of nuts and nodules on the roots.

A peanut crop in the North-East of Victoria.

THE PEANUT.

(*Arachis hypogea.*)

Originally a native of Peru, the peanut is extensively cultivated in all tropical and semi-tropical countries of the World. It has many names, such as earth nut, ground nut, earth almond, grass nut, Goolier, Pindar, and pea-nut. The plant belongs to the Legume family and is closely related to various fodder plants such as Sainfoin, and also to all peas and beans. The fruits, therefore, are not "nuts," but pods, containing seeds, which are eaten as nuts.

The plant is an annual, with a more or less trailing habit; but some of the modern varieties have developed a very definite bush habit. The trifoliate leaves are larger than those of red-clover, and small yellow flowers are borne at the leaf axils or leaf joints. When the flower is fertilized the flower petals die and the very small immature and fertilized ovary is seen at the end of the flower stem. The stem takes a definite downward turn, and the end, or "peg," as it is called, slowly forces itself underground. Here the pod develops until it is mature. The roots of the plant, like all other legumes, have the characteristic nitrogen nodules or tubercles well distributed on all parts.

There is another plant belonging to the family Leguminosae which develops its pods in the same way. This is the Bombarra nut, *Voandzea subterranea*, a plant native to East and West Africa. From this plant the seeds

are collected either ripe or unripe and eaten cooked as we eat peas or beans.

In order to allow the "pegs" to push their way underground the soil should be very loose and friable. On this account, the soil should be one of a sandy character, either a light sandy loam or an alluvial soil. Good drainage is essential, and the soil should be well supplied with plant food. Heavy clay soils or coloured loams will stain the pods and so reduce the value of the commodity, as bright-shelled peanuts always bring a higher price. Lime is an essential, the peanut being a lime-loving plant. The heaviest yields usually are obtained from soils having a high lime content. In addition, lime in the soil gives freedom from "peanut mould," a devastating fungous disease, which attacks the plants when the crop is approaching maturity.

In Victoria peanuts have been successfully produced in Melbourne, the North-East, and Mildura; so that, owing to the wide climatic range of the plant, there is ample room for an increased production of this crop.

The peanut is very sensitive to frost attack, and on that account this tender annual should be grown in spring and summer.

Cultivation and Planting.

The soil should be well ploughed and harrowed, and worked into a fine friable bed to a depth of about 6 inches. This should be done in early spring. The time of planting varies with the locality; thus in Mildura the time would be early in September, while in Melbourne it would be better to delay sowing until early in October.

In preparing the soil for sowing, continuous hills should be worked up so that the plants shall be growing on a well-drained and elevated piece of soil. The seed should be sown at a depth of about 1½ inch. The seed may either be sown as unshelled or as shelled nuts; in either case a satisfactory germination will ensue. But it is considered safer to first shell the nuts, so that all shrivelled or malformed kernels may be rejected. Overcrowding is also avoided, as there are usually two seeds in each pod. Further, it is more economical to sow the hulled seed, as an even and regular spacing can be maintained.

The amount of seed per acre will vary with the size and weight of the variety. A fair average would be 35 lb. of unshelled nuts or from 8 to 10 lb. of kernels. The quantity also depends upon the spacing of the plants and the width between the rows, which in turn varies with the variety of nut to be planted and also with the method of cultivation to be adopted. The upright or bush varieties may be spaced 1 foot apart, while those of the trailing habit should be at least 2 feet apart. In any case, overcrowding must always be avoided. The rows or drills will be from 18 inches to 3 feet apart according to the variety and cultivation methods. When motor or horse-drawn cultivators are to be used, the rows should be spaced about 3 feet apart, depending on the width of the implement.

Germination is usually fairly rapid. In a warm spring, the seedlings should appear within a week. Unshelled pods are somewhat slower, but if they were soaked before sowing growth comes more quickly. This quick germination allows the grower early to determine if there are any misses, and a resowing can be made to fill up any gaps where the seed failed to germinate.

From the time of germination constant cultivation will be necessary. The soil must be kept loose, the soil water conserved, and all summer weed growth must be checked. Manual labour will be required to work the soil around the plants, so that they shall all be well hilled. Thus a satisfactory and loose bed is provided into which the "pegs" may readily push their way.

Varieties.

There are several varieties of peanut on the market, so that the prospective grower need not sow or grow "just peanuts." The variation in plant growth which has given us plants of an upright bushy growth, instead of the spreading and runner type, is a distinct advantage where climatic conditions demand an upright and open type of plant. While runner peanuts often spread for a diameter of 3 feet and perhaps more, with a low height of a few inches, the bushy types have very little spread, perhaps of a foot or more only, and a height of upwards of 2 to 3 feet.

It is considered that the latter are easier to operate when separating the nuts from the straw, and that they mature earlier than the runner types. Following is a list of some of the commercial varieties:—

Virginia Runner and *Virginia Bunch* differ only in the habit of growth. The nuts are large, smooth, and well flavoured. They are very suitable for confectionery purposes.

A crop of peanuts showing damage by mould.

White Spanish, Red Spanish, and *Large White Spanish.* There are several varieties or strains of the Spanish peanut, which is usually a strong-growing plant of a bushy habit with large and plump nuts and kernels.

Valencia is a Spanish type of bushy growth with long pods which often carry three nuts. The flavour is good.

Chinese, White China, or *White Chinese* is a strong-growing plant, of free running habit. The nuts are large and clean, and the plant matures the nuts late. This is suitable for sandy soils, and it has produced good crops near Melbourne.

Harvesting.

The time of harvest usually depends upon the length of the season. The crop is always of a rich bright green colour; but as soon as this begins to change to a dull green or a dull yellow, the ripening season is approaching. Some of the nuts should be examined to determine the stage of ripeness. Harvesting should not be delayed if the pods are well filled, as mould quickly sets in and the pods decay.

The crop is either dug by hand or, if an extensive one, by a machine digger. The soil should be shaken from each plant, and then the plants should be spread out on the ground to partly dry, that is until the leaves are well wilted, but not brittle. The crop is then stacked into low heaps or stooks for a week or two, whence it is removed into a shed or barn. The nuts are picked by hand, and when thoroughly dry, bagged for market.

In America there are machines for removing the nuts from the vines and for steaming them as well.

The quantity of crop produced will vary with the season, with the quality of the soil, and also the rainfall. Thus the yield is recorded as from one to three tons per acre.

Diseases.

Disease is rare in the peanut crop. Leaf spot (Cercospora personata) has formed an occasional attack only, and can be recognized by dark yellow or brownish spots on the foliage. It is not a serious trouble, and does not occur when plants are growing in the full open sun, and where lime is present in the soil.

The most serious fungous trouble is peanut mould. This disease occurs in summer and autumn. It first appears as an attack of the collar, and a fungal growth rapidly develops all over the plant, the hyphae forming a very cobwebby appearance. The plant rapidly wilts and dies, and the infection is quickly carried through the crop.

As soon as any wilting is noticed, the whole crop and the soil should be heavily dusted with fresh unslaked lime. While this does not revive any plant attacked, it at once checks any further progress of the fungus through the crop.

Yarra Glen Competitions

Pasture and Meadow Hay

Report of the Judge, J. E. Harrison, B.Agr.Sc.

WITHIN 30 miles of Melbourne, Yarra Glen and district is a fertile grazing area occupying the river flats and hill lands along the south-east of the Yarra beyond Lilydale. The soils on the flats are sometimes heavy, but are usually loamy and fertile, or occasionally of a peaty nature. On the rising land, the soil is commonly a grey loam overlying a heavy clay subsoil. The district enjoys an adequate rainfall, including a good summer rainfall, which makes possible the growth of perennial grasses, as well as much white clover in the most favorable seasons. Certain of the river flats are subject to flooding, and afford rather precarious grazing for this reason, but the flats which do not flood provide excellent pasture of a high carrying capacity. Pasture improvement has proceeded rapidly in the district during the last seven or eight years, and good, growthy pastures are found on the rising country as well as on the flats. The numbers of stock—dairy cattle, fat cattle, and sheep—have increased greatly in the district in the last few years, and probably in no other grazing district is a greater concentration of animals to be seen at this time of the year.

Owing to a dry early spring, grazing had been heavy and close, and many farmers refrained from entering exhibits as their pastures were not sufficiently forward for competition. A flood also had temporarily spoilt the pasture on some of the lower flat lands, and made them unsuitable for entry. Though there was only a limited number of entries in certain sections, competition was nevertheless keen, and much interest and enthusiasm were expressed at the time of inspection.

Both pastures and meadow hay crops were regarded as of a satisfactory nature in the competition. All pastures exhibited were either well improved or were steadily improving from typical natural pastures. There is still a great deal of natural pasture in the district, and it is only a question of time before owners of unimproved property adopt the methods of their progressive neighbours. The crops of meadow hay were generally good, and by the number of crops seen, it is apparent that farmers are well aware of the advantages and necessity of fodder conservation.

It is recognized, and there is evidence from the composition of the pastures, that certain soils, more particularly on rising ground, are wet in winter and in need of drainage. The abundance of fog grass, the occurrence of sweet vernal and bent grass (called couch grass in the district), and the amount of rusting which occurs in subterranean clover, all suggest wet soils. It is aparent also from the broken and

irregular surface soil in many pastures that the soil cuts up badly in winter. Mr. W. R. Lithgow expressed his intention to try "mole" draining in a few fields, and the results should be watched with interest.

Certain soils in the district apparently make a strong response to farmyard manure. On Mr. Selman's place a portion of a field had been top-dressed with farmyard manure, and was outstanding as the densest and greenest part of it, although, as Mr. Selman said, it had been the poorest part previously. In all pastures the growth around pats of cow-dung was stronger than is usually seen, and in oat crops the same influence was sometimes strikingly apparent. Old residents are well aware of the value of farmyard manure, and it would seem that there was more reason than perhaps in some other districts for the careful preservation and use of the products of the farmyard.

The results of the competition are set out below.

PASTURE COMPETITION.

(a) Rising Land.

Name.	General Appearance and Uniformity.	Botanical Composition.	Denseness.	Freedom from Weeds.	Management.	Total.
Possible points ..	**20**	**20**	**20**	**20**	**20**	**100**
Chable, D. A. ..	17	19	15	19	17	87
Lawlor, W. (exhibit B)	16	16	17	19	15	83
Lithgow, F. B. ..	15	17	15	18	16	81
Fraser, H.	14	17	18	17	14	80
McCann, H. G. ..	15	17	17	17	14	80
Lithgow, W. R. (exhibit A)	15	16	16	16	16	79
Doake, J. P. (exhibit B)	14	14	15	18	16	77
Upton, M.	12	20	10	18	17	77
Doake, J. P. (exhibit A)	15	14	17	16	14	76
Lithgow, W. R. (exhibit B)	14	16	14	17	14	75
Bell, G. (exhibit A) ..	13	13	13	18	17	74
Lawlor, W. (exhibit A)	13	15	16	16	14	74
Bell, G. (exhibit B) ..	10	17	10	18	14	69
Selman, J. R. ..	10	12	12	17	17	68

Mr. D. A. Chable, who gained first place with 87 points, exhibited an excellent pasture, which had been sown in 1934, and is in its prime. It consisted of rye grass, cocksfoot, white clover, red clover, and subterranean clover. There was a nice balance between the grasses and clovers, and the field was clean and had been well managed, though some dung pats had accumulated under heavy grazing. Mr. Chable, who is a Swiss settler, is thoughtful and systematic, and is making sound progress in developing what was an unimproved property.

Mr. W. Lawlor gained second place with 83 points for a clean, uniform field, of a good colour, and a strong sole of grass. The rye-grass in it was very strong and healthy. It contained subterranean clover in a small amount only, and it was considered that a more even balance would have been an advantage. When rye-grass dominates a field, it restricts the period of growth (and of grazing) to certain times of the year, whereas a mixture of grass and clover prolongs the grazing period. The dense sole of grass, however, indicated high fertility, and evidently Mr. Lawlor had managed the field with this object in view, as the soil was not naturally a highly fertile one. A sound, uniform pasture had resulted, lacking only a nice balance between grass and clover.

Mr. F. B. Lithgow also exhibited a good pasture, consisting of subterranean and white clover, with rye-grass and fog, and traces of bent grass. It appeared to have been rather heavily and continuously grazed, with a consequent loss of denseness. This was in contrast to the exhibit of Mr. H. Fraser, which was a sound pasture on a very good piece of soil. It was lush and dense, and had grown away from grazing stock. It also needed more harrowing to break up and spread dung, which was lying about and causing rank unpalatable patches. The composition of the pasture was excellent, and Mr. Fraser would have little difficulty in making it a first class exhibit. Among the remaining pastures were good sound swards, such as are obtained by regular top-dressing and relatively lenient grazing. A few exceptions were those of Mr. Upton, Mr. Bell, and Mr. Selman, who exhibited young, developing pastures, which stood little chance under the system of points awarded, but were really satisfactory exhibits of their kind. Mr. Upton's pasture had been sown down recently, a good strike had been obtained, and the pasture promises well. One of Mr. Bell's exhibits had been developed from natural pasture by top-dressing for the last three years; it consisted of a miscellany of grasses and clovers, and was obviously improving greatly. The other exhibit had been sown down last year, and the sward had not thickened up, mainly, I thought,

because a hay crop had been taken in the previous year. Mr. Selman's exhibit was a natural pasture which had been top-dressed, and in which clover and rye-grass were gaining ground. It is certain that under his management Mr. Selman's natural pastures will greatly improve within a few years.

PASTURE COMPETITION.

(b) Flat Land.

Name.	General Appearance and Uniformity.	Botanical Composition.	Denseness.	Freedom from Weeds.	Management.	Total.
Possible points ..	**20**	**20**	**20**	**20**	**20**	**100**
Lithgow, F. B. ..	17	17	15	18	16	83
Irvine, T. (exhibit B) ..	16	15	15	16	14	76
Irvine, T. (exhibit A) ..	14	14	13	15	13	69

Mr. F. B. Lithgow exhibited a very good pasture on typical flat land of the district. Though the sward was being grazed at the time of inspection, it was still reasonably dense and in good heart. The sward consisted of rye-grass, white and subterranean clover, with a proportion of fog grass. It was clean except for a few thistles, and uniform except for dung patches. The sward would be improved in denseness and in carrying capacity by more intermittent and less continuous grazing.

Mr. Irvine's exhibits were on heavy soil, and consisted of rye-grass, subterranean and white clover, with rather much rib grass. Exhibit B had a nice sprinkling of cocksfoot in parts. It was denser and greener, and had a better appearance generally, than Exhibit A, which had been flooded, and the herbage was still stained. The excessive amount of rib grass was attributed to opening of the sward by very hard grazing at certain periods.

MEADOW HAY.

Mr. C. J. Cochrane, who gained first place, exhibited a very clean field of exceptional quality. It consisted of perennial rye-grass, subterranean and white clover, which formed dense but not tall growth, and, if all goes well, Mr. Cochrane should make some excellent hay from this field. Only a sprinkling of second rate species occurred in the field, and these were in such a small proportion that they would barely affect the quality of the hay. Like all fields in the district, it showed some lack of uniformity, but otherwise presented an excellent appearance.

Mr. W. Lawlor, who gained second place, also exhibited an excellent field. It was a small paddock, and it is interesting to note that small fields, whether of pasture or of meadow hay, were of higher average quality than large ones. They are more manageable, and better results are obtained. Mr. Lawlor's field was uniform, and its appearance was spoilt only by the presence of tall fog-grass, ripening in advance of the rye-grass. It consisted mainly of rye-grass and subterranean clover, green, healthy, and fairly dense. I noted that the field contained the mid-season strain of subterranean clover. The late strain, known as Tallarook, would suit this district well, and would give a longer season of green grazing. Farmers who intend sowing down subterranean clover should take the opportunity of trying the Tallarook certified strain.

MEADOW HAY COMPETITION.

(a) Rising Land.

Name.	Yield.	General Appearance and Uniformity.	Quality.	Freedom from Weeds.	Total.
Possible points ..	**40**	**20**	**20**	**20**	**100**
Cochrane, C. J. ..	26	18	19	19	82
Lawlor, W. ..	28	18	16	19	81
McMeekin, G. ..	30	15	15	17	77
Selman, J. R. ..	30	15	15	17	77
Bell, G.	28	15	15	17	75
Hubbard, A. ..	26	14	14	17	71
Allen, N. ..	20	12	17	19	68
Lithgow, F. B. ..	20	14	12	18	64
Speeding, M. ..	20	14	12	17	63

As there was only one point difference between the awards of Mr. Cochrane and Mr. Lawlor, there was obviously not much between their two fields, and it was only the exceptional quality and cleanness of Mr. Cochrane's field which enabled it to score.

Mr. McMeekin, Mr. Selman, and Mr. Bell exhibited fields which promised satisfactory

yields of good quality hay. Mr. Hubbard's exhibit was a good crop also, but contained rather much fog and goose grass. The field exhibited by Mr. N. Allen was excellent in parts, with clean, dense rye-grass and subterranean clover; but other parts were sod-bound with bent grass, and would yield little or no hay. The fields exhibited by both Mr. Lithgow and Mr. Speeding contained much substerranean clover attacked by a rust fungus; and also much sweet vernal grass, a third rate grass which is likely to infest land wet in winter. Their exhibits had to lose points for appearance and quality.

MEADOW HAY COMPETITION.

(*b*) Flat Land.

Name.	Yield.	General Appearance and Uniformity.	Quality.	Freedom from Weeds.	Total.
Possible points ..	**40**	**20**	**20**	**20**	**100**
Lithgow, W. R. ...	30	15	16	18	79
Lithgow, F. B. ..	25	14	14	18	71
McMeekin, G. ..	20	14	16	19	69

Owing to prolonged dry conditions in early spring, grazing had necessarily been heavy and sustained on the flat land in the district, and a restricted number of entries was received in this section. The fields had been closed late in the season, and the yields appeared to be light at the time of judging. Mr. W. R. Lithgow's field was dense, but not high. Both white clover and subterranean clover were dense, and there was a fair proportion of rye-grass and young Paspalum in it. It contained both fog and silver grass, which would reduce the quality of the hay.

There was rather more fog grass in Mr. F. B. Lithgow's exhibit, and it showed a lighter yield, but otherwise it was much the same. Mr. McMeekin's crop was light, but of nice quality. It consisted of alsike clover and Italian rye-grass, sown three years ago. The alsike was thinning out, and silver grass had become rather plentiful, but the crop should make good hay.

STRAWBERRY CLOVER COMPETITION.

For 1 Acre Showing Most Cover of Strawberry Clover.

Name.	Estimated Cover of Strawberry Clover.
Irvine, T.	80 per cent.
McMeekin, G. (exhibit A) ..	60 „ „
McMeekin, G. (exhibit B) ..	35 „ „

Designed to stimulate local interest in strawberry clover as a pasture plant suitable for heavy soils on flat land, this competition drew three entries only, but the results being obtained on the areas inspected are such as to suggest that this clover could be more widely used with advantage in the district. It is not suitable for land subject to long flooding in spring or summer, but on heavy soils which are wet in winter and do not flood in spring and summer, the clover is persistent and productive. It responds to top-dressing with superphosphate, and any areas planted should be regularly treated with this manure. Practically the only seed obtainable is of New Zealand origin, and belongs to a rather dwarf, small-leaved strain, as compared with the local strain. A supply of seed of the local strain is badly needed. At present, if it is desired to establish the local strain in preference to the New Zealand, it is necessary to obtain a supply of runners from a good local field, and heel them in August or September.

On Mr. Irvine's exhibit there was a good cover of strawberry clover, intermingled with both white and subterranean clovers. Both Mr. McMeekin's exhibits had been sown to seed three years ago, with satisfactory results. Exhibit A was pasture, in which the strawberry clover was quickly covering the ground and taking possession of it from worthless native grass species. Exhibit B had been closed for hay, and though the clover covered only about one-third of the exhibit, it was dense and heavy where it had become established.

Packing Apples and Pears for Export

Principles Involved

By Basil Krone, Fruit Packing Instructor.

DURING the past few years, many improvements have been made in the presentation of Victorian fruit on the overseas markets. It is necessary for these improvements to continue because of the increasing exactness of a discriminating public and competition from other countries.

The Victorian producer may have his own opinion as to the tightness of packing, and the weight of fruit desirable in the export box, but he will readily concede that his best market is maintained by satisfying a demand, rather than by placing a commodity on the market in a manner which he considers best, for the purchaser has the last word. The export trade demands of every case full weight of fruit attractively presented, and this will be best achieved by a rigid adherence to recommended methods of packing.

Bruising.

It should be remembered, of course, that as far as bruising is concerned, a multiple layer system of packing fruit that will entirely eliminate it, has not yet been devised. The best that can be done is to adopt methods designed to reduce bruising to a minimum. Nesting the fruit individually in single layers is, so far, the only infallible method, but the increase in overhead expenses makes this usually not a commercial proposition.

Cases.

It is but a few years since the "dump" case with the system of packing suited to its rigidity was largely abandoned in favour of the "standard" case, with a much altered method of packing, and now, although drastic changes are not necessary, it is imperative that the style of box we are using be absolutely uniform in its manufacture. It should have sides thick enough to be *rigid*, while lids and bottoms should be thin enough to give the greatest flexibility without breaking. In addition, the lid should be $\frac{1}{8}$ to $\frac{1}{4}$ inch longer than the sides and bottom in order to permit its bending over the "bulge" or "crown" of the contents.

Full Weight of Fruit—Packing to Counts.

The next important step is to be able to guarantee full weight of apples in the containers, particularly with our main export variety, the Jonathan, which is normally a lighter apple than many others. To do this successfully, the packing of apples to the **recognized counts** should be adopted instead of the old-fashioned method of packing to sizes alone. This recommendation has been made by the Department of Agriculture from the inception of the "standard" fruit box in Victoria; its fulfilment is now necessary.

During the few years that the "standard" case has been in use, co-operative packing houses and packers have gained experience, and now realize the cause of underweight cases in the export trade. In the past, buyers have demanded fruit packed to "sizes", but when sizes alone are adopted instead of counts, the packing house operatives are seriously handicapped, because certain of the sizes exported cannot be packed so as to ensure the full bushel weight being packed in the case.

For those not so experienced in the packing of fruit, it might be explained that the sizing of apples into the usual gradations of equal $\frac{1}{4}$ inches, and the use of a perfectly uniform line, does not permit efficient packing in many cases. For example, if an operative is compelled to use a prescribed method to pack a case of apples, carefully graded to a fixed size, and with a stated number in the case, the top layer may come only a little higher than the top of the sides. This invariably results in some counts in the consignment being underweight.

A "standard" case will not hold the generally accepted bushel weight of Jonathan apples, filled only to the level of the top of the sides. The case must be packed with a good "bulge" or "crown", and have a very flexible lid to accommodate it. The correct "bulge" or "crown" with full weight can be packed only if the operative is permitted to select a proportion of slightly larger apples than those constituting the bulk of the case.

JONATHAN APPLES—180 COUNT.

The packed case of "180 count" of Jonathan apples may contain a proportion of apples with minimum diameters slightly larger than 2½ inches, and the remainder may vary in diameter up to, but not including, 2 11/16 inches, in order to obtain correct weight. This case could be honestly branded either 2½ inches or 180 count, but, on the other hand, the 198 count requires an almost equal proportion of extremely small 2½-inch, and very large 2¼-inch apples for correct pack and weight of fruit. Most of the apples in this case are between the usual sizes and it cannot be honestly branded 2½ inches or 2¼ inches, although the fruit is of nearly uniform size. **It is preferable to brand the "count" and not the "size" on cases of apples for export.** This procedure would also encourage the retailing of apples by the dozen, as is done with oranges, &c.

With standardized timber for apple boxes, the deletion of the obsolete method of *packing to sizes,* and the introduction of *packing to counts,* the producer will be better able to guarantee a high minimum weight for each case of apples exported. Some slight modifications, of course, are necessary in the present method of packing, because it is essential that apples for export must stand considerably higher than the sides of the case before lidding, to secure a tight pack, and at the same time avoid any possibility of bruising.

Packing Instruction.

To give the necessary instruction in the recent improved methods of apple and pear packing, it is proposed to augment the present staff by the appointment of three temporary packing instructors during the next export season. An extension of the usual fruit packing classes conducted in various parts of the State for children and adults is also contemplated.

It is suggested that growers, and others, interested in the latest methods of packing, should make early application to the Director of Agriculture for the services of these packing instructors. It is desired to organize the packing classes as early as possible.

Packing charts, dealing particularly with Yates apples and Josephine pears for export, are now in course of preparation, and when completed will be forwarded to all co-operative packing houses and associations in the State. Others should write for a free copy.

Plums for Queensland

New Grade Standards

THE Superintendent of Horticulture, Mr. J. M. Ward, has received from the Queensland Department of Agriculture particulars of the new grade standards for plums sold in Queensland. These require that each case shall be stamped or stencilled with the name of the variety, the grade and size, the initials of the christian names and the full surname and address of the packer.

For the purpose of grades the varieties have been divided into two groups. The first group includes Early or Little Gem, Evans's Early, Blue Rock, Tibbits, Early Orleans, Damson, Cherry Plum, Doris, Duffy's, Paterson Early, Wilson, Angelina Burdett, Wright's Early, Santa Rosa, President, and Grand Duke. The Special grade for this group provides for a minimum diameter of 1¾ in, with 1½ inch for Standard, and 1⅜ inch for Plain. Plums under 1⅜ inch in diameter, but with a variation of not more than ¼ inch in the diameters of the plums in any case, may be packed as "Small" grade.

The second group includes the varieties Burbank, Pond's and Giant Prune, Black Diamond, Magnum Bonum, Coe's Golden Drop, Shipper, Kelsey, Wickson, Ballina, Shiro, Beauty, Formosa, Sultan, October Purple, and Narrabeen. The minimum diameters for this group are—Special, 2 inches; Standard, 1¾ inch; Plain, 1½ inch; and Small, under 1½ inch.

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Manurial Trials on Potatoes

Results for 1936-37

By J. T. Ramsay, Potato Expert.

The results of the experiments at Trentham, Wheatsheaf, Warragul, Beech Forest, Fish Creek, Musk, Illowa and Koroit appeared in the October issue of this Journal.

MILLBROOK.

MILLBROOK is the main potato experimental area in the State. In addition to the usual manurial trials, the experiments there include green manuring, cultivation tests in which the effect of one inter-row cultivation is compared with the effect of two and three such cultivations, seed selection, immature and ripe seed trials, methods of seed storage, and dipping tests for disease control.

Owing to the dry weather experienced in this district last season the response to manures was not marked but, despite this, the returns from the variously fertilized plots are consistent with the results of previous years, with the exception that the dressing of 3 cwt. super. plus 2 cwt. ammonium sulphate per acre gave an increase in yield of 9 cwt. per acre over what is considered to be the optimum dressing—3 cwt. super. plus 1 cwt. ammonium sulphate per acre. This is probably explained to some extent by the fact that the nitrogenous fertilizer counteracts the tendency of superphosphate to shorten the maturation period of the crop. This is especially the case in a dry season, and thus, this year, in the plots treated with the heavier dressing of ammonium sulphate, the period of tuber development was lengthened by twelve or fourteen days.

However, over the period of ten years during which these trials have been conducted the 4 cwt. super. and ammonia (3:1) has proved itself to be the optimum application for this area, giving double the yield obtained from the unmanured plots. The average cost of this dressing is 8s. for each ton increase in yield. During the past two seasons the dressing of 4 cwt. super. and ammonia (3:1) was supplemented by 2 cwt. per acre of sulphate of potash. The result, however, has not been satisfactory, the yields being lower than those obtained from the plots not receiving potash.

The results of the season's trials are set out in Tables I. and II.

TABLE I.—MANURIAL TRIALS, MILLBROOK, 1936–37.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	3 10	0 6	9
Super., 3 cwt. ..	3 15	0 11	17
Super., 4 cwt. ..	4 0	0 16	25
No manure	3 4	..	..
Super., 3 cwt. + amm. sulp., 1 cwt. ..	4 13	1 9	45
Super., 3 cwt. + amm. sulp., 2 cwt. ..	5 2	1 18	59
Super., 3 cwt. + amm. sulp., 1 cwt. + pot. sulp., 2 cwt. ..	4 14	1 10	47

TABLE II.—AVERAGE RESULTS, MILLBROOK, FOR TEN YEARS, 1927–28 TO 1936–37.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	4 10	55
Super., 3 cwt.	5 0	72
Super., 4 cwt.	4 18	69
No manure	2 18	..
Super., 3 cwt. + sulp. amm., 1 cwt.	6 1	109
Super., 3 cwt. + sulp. amm., 2 cwt.	7 0	89†
Super., 3 cwt. + amm. sulp., 1 cwt. + pot. sulp. 2 cwt.	6 4	80*

* For two years only. † For five years only.

Potato experimental plots at Millbrook.

Green Manurial Test.

This experiment was designed to determine the necessity, if any, for definite steps to be taken to maintain soil fertility in country which has been under cultivation for a long period. There appears to be no doubt that the ploughing-in of a green manure crop is advantageous in assisting to restore the fertility of the soil, as well as in producing a much better-shaped potato; the reason for the latter effect is the improvement of the mechanical condition of the soil.

Up to the present rye has been the plant used as a green manure, and though it has given very good results, it has been found that, should a dry period occur after it has been turned under, decomposition does not take place quickly enough to permit the crop getting the full benefit. This is probably because rye is of a more fibrous nature than oats or barley. For next season oats and barley are being tried, and it is expected that they will prove more suitable. However, the figures given in Table IV., for a four-year period, indicate the beneficial results obtained from the use of rye.

TABLE III.—GREEN MANURE v. BARE FALLOW TEST, MILLBROOK, 1936–37.

Manure per Acre.	Green Manure.	Bare Fallow.	Percentage Increase
	T. C.	T. C.	%
No manure	3 4	2 19	8
Super., 3 cwt. + amm. sulp., 1 cwt.	4 13	4 3	12

TABLE IV.—AVERAGE RESULTS, BARE FALLOW v. GREEN MANURE, FOR FOUR YEARS TO 1936–37.

Manure per Acre.	Green Manure.	Bare Fallow.	Percentage Increase.
	T. C.	T. C.	%
No manure	3 13	2 11	43
Super., 3 cwt. + amm. sulp., 1 cwt.	7 10	5 6	41

Cultivation Tests.

Over a period of twelve years inter-row cultivation has been demonstrated to be of practical value, the results showing an average increase of approximately 1 ton per acre for each additional horse-hoeing. The exceptionally dry conditions prevailing last season almost nullified the effect of the workings, but when the low cost of the operation is considered, it is obvious that systematic inter-cultivation is a most advisable cultural practice.

Results of the tests are shown in Table V.

TABLE V.—CULTIVATION TESTS, MILLBROOK, 1936–37.

Treatment	1936–37.		Average for Twelve Years to 1936–37.	
	Weight Marketable Tubers.	Percentage Increase.	Average Yield.	Percentage Increase.
	T. C.	%	T. C.	%
One cultivation..	5 5	..	4 15	..
Two cultivations	5 10	5	5 15	21
Three cultivations	5 13	8	6 14	41

Seed Selection Tests.

If the standard of trueness to type and yielding capacity are to be maintained unimpaired, there is but one method by which potatoes may be selected for seed. That method is by selecting from the field, while the crop is green and growing, the seed intended for the following season's planting. Seed selected in this way can be chosen from the most desirable plants, i.e., those healthiest, most vigorous, and yielding the greatest number of marketable-sized tubers. Seed from such stock must produce plants of more vigor than will seed taken promiscuously from a heap where fit and unfit are mixed.

The results obtained during the 1936-37 season, and the average results for the past eleven years of the seed selection tests, are shown in Table VI.

TABLE VI.—SELECTION TESTS, MILLBROOK. 1936–37.

Treatment.	1936–37		Average for Eleven Years to 1936–37.	
	Weight Marketable Tubers.	Percentage Increase.	Average Yield.	Percentage Increase.
	T. C.	%	T. C.	%
Selected seed ..	3 10	17	7 12	27
Unselected seed ..	3 0	..	6 0	..

Immature v. Ripe Seed.

The improvement in yield obtained by using immature seed has been demonstrated so frequently and so clearly that the practice of securing seed dug before the ripening of the plants has been thoroughly established in countries where potato culture is specialized. The best time at which to harvest potatoes intended for seed purposes is when an indication of ripening is shown by the first yellowing of the leaves. At this stage the seed has attained a sufficient degree of maturity to give the desired increase in yield, while but little weight of crop is sacrificed. Over a nine-years period the average increase resulting from the use of immature seed has been 1 ton 8 cwt. per acre, or 22 per cent.

The figures relating to this test are set out in Table VII.

TABLE VII.—IMMATURE v. RIPE SEED TEST, MILLBROOK, 1936–37.

Treatment.	1936–37.		Average Results for Nine Years to 1936–37.	
	Weight Marketable Tubers.	Percentage Increase.	Average Yield.	Percentage Increase.
	T. C.	%	T. C.	%
Ripe seed ..	5 14	..	6 7	..
Immature seed ..	6 6	10	7 15	22

Seed Storage.

Although the returns from last season's tests are not so striking as in previous years, the use of the correct method of seed storage cannot be too strongly advocated. A striking feature, not apparent in the table of results, was the fact that every tuber stored in standard seed boxes was fit to plant, while there was 33 per cent. waste in the seed stored in bags.

Boxing has been found to be the ideal system of storage, and although the initial cost may be somewhat heavy, the increased yield over a few years will more than compensate for the outlay. Growers who use seed potato boxes have found that seed treated by this method will mature from two to three weeks earlier than bagged or pitted seed; in addition, it will provide a stronger and healthier stand.

Results of this test at Millbrook are shown in Table VIII.

TABLE VIII.—BOXED v. BAGGED SEED TESTS, MILLBROOK, 1936–37.

Treatment.	1936–37.		Average Results for Eleven Years to 1936–37.	
	Weight Marketable Tubers.	Percentage Increase.	Average Yield.	Percentage Increase
	T. C.	%	T. C.	%
Bagged seed ..	5 12	..	3 10	..
Boxed seed ..	5 18	5	6 7	81

Dipping Tests.

The necessity for treating seed potatoes with formalin for the control of collar stem rot and common scab is again proved by the striking

results obtained at Millbrook last season. The treatment consists simply of dipping the seed —preferably in an unsprouted condition—in a solution of formalin of a strength of 1 lb. of formalin to 20 gallons of water for 90 minutes; with sprouted seed the quantity of water should be increased to 30 gallons. The amount involved is small, a 1-lb. bottle of formalin, costing about 2s. 6d., being sufficient to treat 1 ton of seed. In view of the prevalence of collar stem rot, or Rhizoctonia, last season, dipping is strongly recommended to growers.

It should be pointed out that no manurial value is claimed for the formalin treatment. The high average increase of 82 per cent., over a period of nine years, is apparently due to killing of fungus spores, so permitting the plants to function normally.

Results for the 1936-37 season, and average results over a period of seven years, are shown in Table IX.

TABLE IX.—DIPPING TESTS, MILLBROOK, 1936–37.

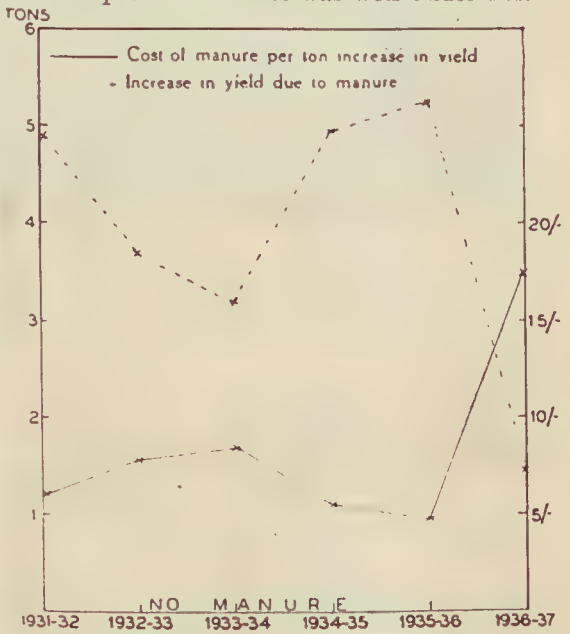
Treatment.	1936–37.		Average Result for Seven Years to 1936–37.	
	Weight Marketable Tubers.	Percentage Increase.	Average Yield.	Percentage Increase.
	T. C.	%	T. C.	%
Undipped seed ..	3 15	..	3 18	..
Dipped seed ..	5 18	57	7 2	82

Manure Costs and Yield.

Comparative costs of the increased yields obtained with the various fertilizer treatments at Millbrook are shown in the accompanying graph, which shows the actual cost involved in obtaining each ton increase during the last six years. It will be noted that this cost is in inverse ratio to the increase in yield—i.e., the heavier the yield the lower the cost involved for each ton of increase.

Even last year though the cost per ton increase was as high as 17s. 6d. (owing to a light yield at Millbrook), it was still within the bounds of economy because, despite the low prices obtained for the late crop, the cost of production was lower than the value of the potatoes for stock feed. In addition, there is a certain residual value from the fertilizer, which it is difficult to calculate but which may often be noted when a cereal crop follows a potato crop, an obvious improvement in growth being evident in those sections manured the previous year as compared with the crop on the unmanured sections.

In the graph the base line represents the result of the "no manure" plots. It should be noted that in five out of the six years cited, the cost per ton increase was well under 10s.



Graph 1.—Showing the relationship between cost of manure per ton increase and increase in yield due to manure (Millbrook, 1931–1937). The manurial dressing consisted of 3 cwt. super and 1 cwt. amm. sulph. per acre.

AVERAGE COST PER TON INCREASE AT TEN CENTRES.

District.	Period of Test.	Cost per ton Increase.
	Years.	s. d.
Illowa	9	9 4
Koroit	7	15 4
Millbrook	10	8 0
Musk	9	11 3
Romsey	9	17 5
Trentham	10	8 3
Wheatsheaf	9	10 9
Fish Creek	9	8 8
Beech Forest	6	10 5
*Warragul	11	9 4

* At Warragul, the manurial treatment consisted of 6 cwt. super. and 1 cwt. potash per acre.

The accompanying table shows similar costs for ten centres in which potato manurial trials have been conducted over periods varying from six to eleven years, and that the average cost of manure required to produce each extra ton

as compared with "no manure" is approximately 11s. This represents the results of over 80 different trials. The fertilizer treatment consisted of 3 cwt. superphosphate and 1 cwt. ammonium sulphate per acre, except at Beech Forest and Fish Creek, where the treatment consisted of 6 cwt. super. and 1 cwt. ammonium sulphate.

The material benefit to be obtained from the use of artificial fertilizers, even on the rich volcanic soils, is illustrated in Graph 2, which

Graph 2.—Showing the average of 63 tests conducted on volcanic soil in seven districts over a 9-year period. The material increase to be gained by the use of artificial fertilizers, even on the rich volcanic soils is shown also.

shows the increase due to 3 cwt. super. per acre alone and in combination with 1 cwt. of ammonium sulphate per acre. This graph has been compiled from the results of 63 tests conducted over a period of nine years on volcanic soils in seven districts.

Romsey.

The Romsey plots, which are situated on the property of Messrs. Spring Bros., were dug on May 6th. The season there was particularly favorable and the yield high. Locally grown late Carman seed was used, and the sample was of good shape and quality.

It is difficult to understand the comparatively meagre response of the red volcanic loam of this district to treatment with artificial manures. There is no evidence to show that it differs from volcanic loams of other parts of the State. A factor contributing to its unresponsiveness may be that its yearly rainfall is less than that of similar country only a few miles distant. Although the increases gained over a period of nine years are appreciable, they are not comparable to those obtained at other centres with similar environment.

The figures for the season 1936-37 are given in Table X., and the average results over the nine-year period in Table XI.

TABLE X.—POTATO MANURIAL TRIALS, ROMSEY, 1936-37.

Manure per acre.	Weight Marketable Tubers.
	Tons. cwt.
Super., 2 cwt.	8 3
Super., 3 cwt.	8 8
Super., 4 cwt.	8 13
Super., 3 cwt. and amm. sulph. 1 cwt.	9 0
Super., 3 cwt. and amm. sulph. 2 cwt.	9 5
No manure	9 3

TABLE XI.—AVERAGE RESULTS, ROMSEY, FOR NINE YEARS TO 1936-37.

Manure per acre.	Average Yield.	Percentage Increase.
	Tons. cwt.	%
Super., 2 cwt.	5 18	17
Super., 3 cwt.	6 7	26
Super., 4 cwt.	5 19	18
Super., 3 cwt. and amm. sulph. 1 cwt.	6 10	29
Super., 3 cwt. and amm. sulph., 2 cwt.	7 1	31*
No manure	5 1	..

* 5 years only.

The Export of Pig Meats to London

AT the last meeting of the Australian Meat Board the question of the export of pig meats to the United Kingdom was considered and the following resolution was agreed to:—

> That the Board considers that the best way to export pig meats from Australia to the United Kingdom is in the form of frozen bacon or carcasses and pieces suitable for manufacture into bacon and ham, and recommends accordingly to producers.

The Board had before it at the time a memorandum on the subject from Mr. R. H. Heywood, B.V.Sc., its executive officer in London. In this memorandum Mr. Heywood points out that the spectacular developments which have taken place in the export of pig meats from Australia and New Zealand in recent years were due, mainly, to the increase in shipments of baconers and as a result of the Pigs and Bacon Marketing Schemes. The schemes have broken down, or at least are in a state of suspended animation, and for that reason the future is uncertain, although the pork and bacon trades in the United Kingdom are distinct and the latter is of the greater volume.

With that reservation, Mr. Heywood submits the following report:—

"In comparing the pork and bacon trades, it is evident that not only is the latter of greater volume but it is not subject to nearly the same violent fluctuations. It is partly due to these fluctuations—a result of climate or similar conditions—that the home producer is better able to cater for the pork market. Furthermore, it seems certain that the producer, whether he be in the United Kingdom or overseas, but provided he works on some sustained and organized lines, will find the larger pig more profitable. At least, according to publications on the subject, that has been so in the United Kingdom, except when an embargo in 1926 was first placed on fresh pork entering Great Britain (from the Continent) and on other occasions under special circumstances.

It is well known, of course, that the porker must be sold at a considerably higher price per lb. than the baconer to return the same profit, but the extent of this margin may not be so widely appreciated.

Based on the price of feeding meal at 11s. per cwt., A. W. Menzies Kitchin, of the School of Agriculture, Cambridge, worked out the following table:—

PRICES PER SCORE DEAD WEIGHT FOR (*a*) BACONERS; (*b*) CUTTERS; (*c*) PORKERS, WHICH WILL RETURN IDENTICAL PROFIT PER PIG.

Baconer, 130–170 lb.	Cutter, 100–130 lb.	Porker, 60–100 lb.
13	14·8	17·4
14	15·9	18·7
15	16·10	20·0
16	18·0	21·4
17	19·2	22·8
18	20·3	24·0
19	21·5	25·4
20	22·6	26·7

These prices, of course, have taken into consideration the higher gross costs of production in the case of the older pig and the conclusions coincide with those of other experts on the subject. Nevertheless, for some years Australian shipments of pork (which may be said to have commenced in 1930) consisted entirely or mainly of light-weight porkers. In New Zealand they were much quicker to seize on the importance of the bacon pig, or at any rate for a considerable time a large market for New Zealand baconers has been developing.

When the frozen pork trade from Australia first assumed noticeable proportions, it is true the price per lb. of porkers was above, and sometimes considerably above the per lb. price of heavier pigs, but it was noticeable that the average over the whole year was not a great deal higher. Whether the small pigs at the high price were in fact more profitable, I am unable to say, but in view of the necessity of obtaining a considerable premium it is doubtful.

Under Australian conditions the premium required is no doubt less than in the cases stated in the table above, but there must be a

premium when it is a case of one pig of 140 lb. dressed weight or two of 70 lb. each with its overhead costs.

There is no doubt that on occasions the production of porkers is more profitable, but speaking generally, the overseas producer is not in a position to estimate these occasions, and the only question outstanding was whether as a continuing business the average prices of porkers and baconers were wide enough apart to serve as an indication.

The Report of the Reorganization Commission for Pigs and Pig Products (April, 1932), and later the operation of the Pigs and Bacon Marketing Schemes which arose out of the Commission's report, seem to me to have cleared away all doubt.

Briefly, under the Schemes, imports of bacon were restricted to provide total annual supply in the United Kingdom of 10,670,000 cwt. (including Home produced). This led to a reduction from the 1931 figures of something like 130,000 tons—the equivalent of over 9,000,000 lambs. The underlying principle was to regulate the supplies to more or less fix a price for pigs which would be profitable and to provide unlimited opportunities for expansion for the home producer. It was understood that the Dominions of Australia and New Zealand were to have similar opportunities for expansion, Canada having been provided for under an arrangement at the Ottawa Conference. The increase in Empire supplies, including Home production, was to be at the expense of foreign imports.

The Schemes depended to a great extent on the precision of the regulation and, obviously, no great latitude could be allowed, since any considerable excess above estimates would result in an over-supply and miscalculation, the other way, in a shortage.

A difficulty, marked in the case of Australia, was, and is, that estimates have to be accurate and are required a year in advance.

Nevertheless, the results since the commencement of the Schemes can be left to speak for themselves:—

Imports of Frozen Pork.

—	Australia.		New Zealand.	
	Cwt.	£	Cwt.	£
1929 ..	22,623	..	169,480	..
1930 ..	22,620	..	136,945	..
1931 ..	85,805	..	121,803	..
1932 ..	45,480	..	131,142	..
1933 ..	65,567	..	278,047	..
1934 ..	82,424	(221,044)	414,353	(1,109,075)
1935 ..	146,732	(388,931)	490,327	(1,279,103)
1936 ..	232,510	(622,275)	579,086	(1,500,208)
1937 ...	343,000	(estimated)	800,000	(estimated)

Incidentally it might be mentioned that in 1936 the value of imports of frozen pork from Australia exceeded that of chilled beef from the same source by nearly £200,000, and exceeded that of mutton by rather more than that amount. If New Zealand's estimate for

Correct feeding is essential in the production of satisfactory pig meats for export.

1937 is realized it is possible the value of New Zealand's pork supplies may exceed the total value of Australian beef, both frozen and chilled in quarters.

It will be noted how, prior to 1933, the shipments of frozen pork from Australia and New Zealand fluctuated, and how, since that year they have greatly increased from year to year. There is no record of the proportion of baconers during the early years, but it can be taken that they were nil or negligible from Australia, and similarly perhaps from New Zealand. In 1935 and 1936, however, the proportions of baconers in the Australian total approached 70 per cent.

In 1937, if Australian shipments reach their estimated amount (343,000 cwt.) approximately 200,000 cwt., or nearly 60 per cent., will have been baconers. Similarly with New Zealand. In 1935 and 1936 the percentage of baconers was, I believe, between 40 and 47, and in 1937 if the total estimate (800,000 cwt.) is realized, 50 per cent. or more will have been baconers.

Regarding the all-important matter of prices, the first noticeable effect of the Pigs and Bacon Marketing Schemes was the narrowing of price between porkers and baconers. In fact, there were considerable periods when baconers (New Zealand) were making more per lb. than porkers, and judging by developments it at once became evident that the baconer was the more profitable pig.

At the moment, I am advised, trade for Australian and New Zealand baconers is "Fair, with prices unchanged at 6⅜d.—6½d. per lb. ex Store." The price quoted, by the way, for Australian and New Zealand porkers (61/80, 81/100 and 101/120 lb.) is 6¼d. to 6⅜d., the last being for the 101/120 grade.

For the first six months of this year the average price for New Zealand baconers, 121/160 lb. wholesale ex store United Kingdom, has been between 5⅞d. and 6½d.; while the quotations for Australian and New Zealand porkers 60/120 lb., on a basis of "Delivered to Smithfield Market and/or London store," have ranged between 5⅞d. and 7d. It is even possible, therefore, that the larger pigs have maintained an average price per lb. equal to that of porkers. In any case, it has been comparatively a remarkably high price at which, it is commonly said, curers are making no profit.

A side of bacon—suitable for the English market.

No statement has been made regarding the plans which are to replace the Pigs and Bacon Marketing Schemes beyond that the matter is receiving active consideration, but it can be assumed, I think, that as its non-inclusion was to a large extent responsible for their breakdown, pork will be amply provided for.

[*Continued on page 603.*

Horse Management on the Farm

By R. N. Wardle, B.V.Sc., Veterinary Officer.

CONSIDERATION of the management of horses on the farm leads to the conclusion that on many properties insufficient thought is given to the care and attention of these animals. From the farmer's point of view, unfit horses, whether they be actually ill and unable to work, or simply unfit, in that their low bodily condition prevents them giving maximum service in the team, affects the finances in the same way as does actual mortality.

Provision of Shelter.

Victoria's climate is such that it is unnecessary for stock to be housed a great deal, but one of the first essentials on a farm should be the provision of adequate shelter, consisting of hedges or groups of trees which not only provide wind breaks but also create shade against the hot sun of summer.

Animals that are exposed to the cold winds require a great proportion of their food to provide for the maintenance of body heat, thus decreasing the amount available for maintaining or even increasing body structure. The advantage of shade against the sun's rays is too well known to warrant comment, but one point of interest is that the bot fly about to lay its eggs makes its attack in the sunlight.

Feeding.

The farm horse of the present day is an improvement in type and breeding on that of earlier days, but nevertheless, well bred though a horse might be, it will be unable to do efficient work if it be out of condition. Without enlarging on the subject of insufficient feed, attention might be drawn to the not uncommon practice of turning young animals out in the back paddock during their growing period. Very often these back paddocks are unimproved scrub lands on which the young stock have no chance of obtaining sufficient nutriment of the right kind to maintain the body as well as to promote growth.

There is a theory among horsemen that half the usefulness of a horse is derived from the material that goes down its throat when it is growing. In other words, however well bred a horse may be, it will be of little use if starved when young. Again, many working horses do not receive the correct diet. Chaff forms the staple fodder for working horses, and certainly most horses that are being fed, get a good supply, but in many cases the horse would benefit in fitness and appearance, if the amount of chaff were reduced considerably and some concentrate such as oats or bran were added instead. The horse appreciates some variety in its food, and the best sheaves of hay might with advantage be kept for feeding as manger hay to take the place of an evening chaff meal.

As soon as a horse is noticed to be losing condition, one should endeavour to find the cause. Regular work without over-exertion should not cause poorness; rather should a horse muscle up and appear fit and well trained. One of the most common causes of loss of condition is teeth trouble, resulting in the animal being unable to obtain the best results from its ration. When a horse's ill condition is being investigated, the mouth should receive first attention. Collections of grass seeds in the gums and tongue and along the floor of the mouth create a condition which prevents proper mastication. Still more important is the state of the molar or grinding teeth.

Aged horses may have loose molars or large sharp spikes on them; horses even as young as three, four, or five years may have small sharp saw-like edges to their upper molars. Any of these conditions may cause so much pain to

the delicate gums and cheeks that proper mastication is not carried out. Correction of these faults will allow a low-conditioned horse to put on weight. The horse master should educate himself to be able to make an efficient examination of a horse's mouth and to recog nize any irregularity. If necessary, the services of a veterinary surgeon should be obtained, as more harm than good may be done by unskilled dentistry. Once satisfied that the animal's teeth are in good order, a study should be made of the diet and method of feeding and watering. It is only after faulty teeth conditions and improper feeding have been eliminated that more complicated complaints, such as the presence of sand or internal parasites need be considered.

In his natural state, the horse roams over large tracts of country eating as he roams. He is a continuous feeder, with the result that once the stomach has become filled, partly digested food passes further along the digestive tract more or less continuously. We should consider this fact when the horses are being fed artificially, and the advice "feed small feeds frequently" is tendered.

During dry periods, when little or no green feed is present in the paddocks, lucerne chaff mixed with the oaten chaff proves of benefit. It should be understood that watering should take place *before* feeding; this is most important when the horses are working. When horses are hot after working they should be allowed water; this practice is better than that of withholding it until they have cooled down. On the other hand, it is important that feed in any bulk should be withheld until recovery from fatigue has taken place.

An excellent supplement to the diet of horses in poor condition can be made by slowly boiling eight parts of barley and one part of linseed in water until a jelly-like mixture is obtained. To each feed add half a pint of this mixture.

It should be remembered, too, that horses are easily affected by change in diet, therefore, great care should be exercised when they are brought on to dry feed from grass—several days should elapse before the change to hard and dry fodder has been completed. Bran mashes and damped bran and chaff in small feeds should be the order. Cases of colic are often prevented by this routine.

Horses are readily affected by damaged fodder. Hay or chaff that has been subjected to dampness causing mouldiness, or fodder damaged by mice, may be the cause of a disease known as Botulism. In this complaint, the symptoms are those of paralysis, and the mortality is high. If there be any doubt about a sample of hay or chaff it is well to be on the safe side and discard it.

Stable Hygiene.

Regular cleaning up of the stable floors, and the surface of the yards, should be practised, as accumulated litter acts as a breeding ground for flies and disease-producing bacteria.

Wounds of the horse, particularly those of the feet, are so easily contaminated with soil or manure, that immediate antiseptic attention

Groups of trees provide excellent shade for the farm horse during the summer.

should be given. The germ causing tetanus can lie dormant in soil and litter for a considerable period, and the more unhygienic the surroundings of the stables, the more risk there is of serious infection of wounds.

Tetanus is likely to develop with the infection of any deep-seated or punctured wound, and all wounds through the horn of the hoof or frog. Many foot conditions in horses are due to the infection getting into the sensitive tissue through cracks in the wall of the unshod hoof. As this infection increases, the pus formed cannot escape through the horn, but works upwards and causes a breaking out at the coronet. Intense lameness is evident in these conditions, and as drainage of the infection is uncertain it often happens that, after a period of apparent soundness, the condition recurs.

Many of these cases are preventable by management and attention to the hooves. Unshod horses, old and young, should have their feet examined and rasped or cut back at regular intervals. Prevention of feet troubles means efficient horse teams.

Although horses may be hot after working allow them access to the drinking trough.

On every farm there should be a first aid kit containing suitable antiseptic drugs and dressings. Immediate treatment of wounds will prevent, in many cases, serious after effects.

Eye Cancer in Horses

Eye cancer in horses is a very common condition in Victoria, and in many cases, it would appear to be, in part, due to irritation caused by flies or sand.

It most commonly commences on the membrana nictitans or third eyelid, and has the appearance of a warty-looking growth which bleeds easily. If neglected it spreads to other neighbouring structures, and, in time, involves the sight of the eye. In all cases the growth is a continuous source of irritation, and so causes lachrymation, or flow of tears, and increased annoyance by flies.

Complete excision is the only treatment, and this, if done in the early stages, particularly if only the membrana is involved, is generally followed by a radical cure.

In advanced cases the enucleation or removal of the eyeball is essential, and very often the destruction of the horse is necessary.

The Export of Pig Meats to London *(Continued from page 600.)*

Obviously, then, the home producer will be more advantageously placed than before, even in the porker market, and, the expectation is justified, the Dominions will benefit correspondingly in the baconer section.

Consequently, the possibilities of the market for baconers should be great, and the best avenue for the export of pig meats from Australia is in the form of baconers.

I am of opinion that all baconers should be singed. It is true that the practice may result in no immediate financial gain (although a leading firm have been in the habit themselves of singeing Australian pigs at a cost of 4½d. per carcass), but it will popularize our product and enable it to find a wider outlet including, ultimately, the highest class trade where unsinged pigs are now unsaleable."

Butter Production and Export

The following table shows :—

(*a*) Factory production of butter and cheese in Victoria for the period July to September, 1937, compared with the corresponding period of 1936 ; and

(*b*) Quantities and percentages of various grades of bulk butter examined in Victoria for export from 1st July, 1937, to 30th October, 1937, in comparison with the corresponding period of 1936.

FACTORY PRODUCTION OF BUTTER AND CHEESE IN VICTORIA (QUANTITIES IN TONS).

Month.	Butter.		Cheese.	
	1937.	1935.	1937.	1936.
July and August	5,893	5,986	653	614
September	6,000*	6,727	724*	527
Totals, 3 months	11,893*	12,713	1,377*	1,142

* Subject to revision.

BULK BUTTER EXAMINED IN VICTORIA FOR EXPORT (QUANTITIES IN TONS).

Period.	1937–38.					Period.	1936–37.				
	How Graded—				Total.		How Graded—				Total.
	Ch.	1st.	2nd.	Pty.			Ch.	1st.	2nd.	Pty.	
1st July to 25th September ..	2131	593	179	8	2911	1st July to 26th September ..	2673	1138	265	32	4,108
26th September to 30th October ..	5455	1164	223	9	6851	27th September to 31st October ..	4403	1666	327	30	6,426
Totals 1st July to 30th October ..	7586	1757	402	17	9762	Totals 1st July to 31st October ..	7076	2804	592	62	10,534
Percentages ..	77·7	18·0	4·1	0·2	..	Percentages ..	67·2	26·6	5·6	0·6	..

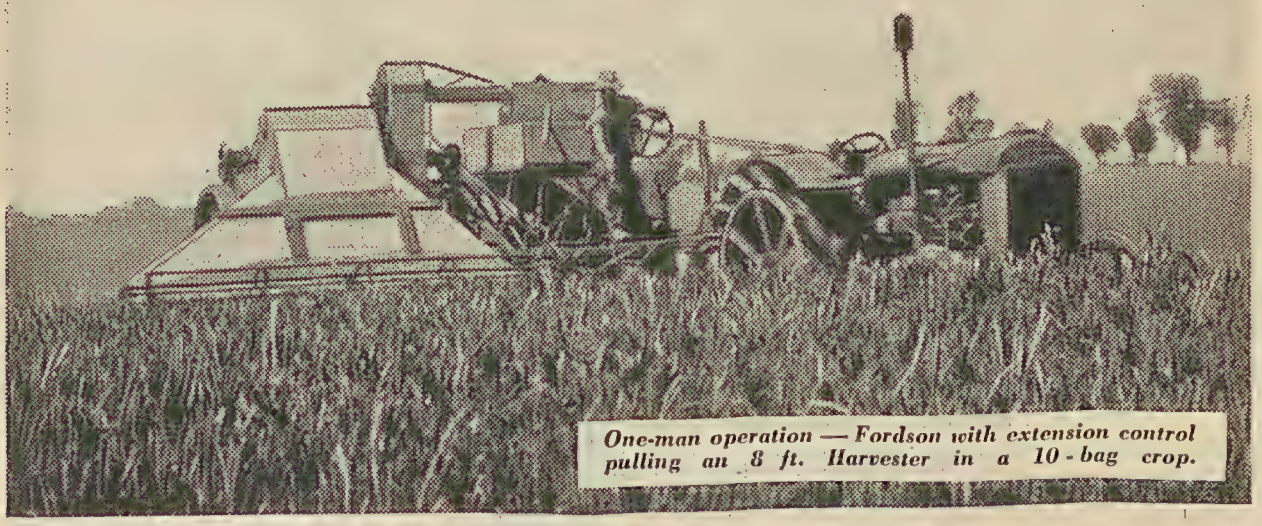
Christmas Mails and Telegrams

THE Postal Department seeks the co-operation of readers in the sending of Christmas gifts and greetings. If these be posted before Friday, 17th December, it will greatly help the Department and lessen the possibility of delay in delivery. It is suggested that if senders so desire packets may be marked "Do not open till Christmas."

Christmas cards may be sent at a cheap rate —1d. per 4 oz.—if the envelopes containing them are unsealed and not more than five words of conventional greeting is written on any card. If the envelopes are sealed full letter rate—2d. per oz.—is payable.

Special ornamental telegram forms and envelopes are provided for the delivery of Christmas and New Year greetings between 13th December, 1937, and 8th January, 1938. To ensure the issue of a telegram on this form the word "Greeting" should be inserted just prior to the address when preparing a telegram for lodgment in the ordinary manner.

FORDSON ECONOMY FOR HARVESTING



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(Australian Tests by Mr. E. J. C. Rennie, Melbourne University.)

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London Markets

Weekly Prices

The following information as to prices offering in London for the principal Victorian primary products has been taken from cablegrams received each week by the Department of Agriculture from the Victorian Agent-General in London.

Product.	Price for Week Ending—			
	5th November.	12th November.	19th November.	26th November.
	d.	*d.*	*d.*	*d.*
Lamb, 1st quality, Victorian .. .. 29–36 lb. ..	7¾	7¾	7¾	7⅞
Lamb, 1st quality, Victorian .. .. 37–42 lb. ..	..	..	7¾	7⅞
Lamb, 1st quality, other States .. 29–36 lb. ..	7⅝	7⅝	7⅝	7¾
Lamb, 1st quality, other States .. 37–42 lb. ..	7½	7½	7½	7¾
Lamb, 2nd quality, Victorian .. .. 28 lb. and under	7½	7½	7½	7½
Lamb, 2nd quality, Victorian .. .. 29–36 lb. ..	7¼	7¼	7¼	7¼
Lamb, 2nd quality, other States .. 28 lb. and under.	7½	7½	7½	7½
Lamb, 2nd quality, other States .. 29–36 lb. ..	7¼	7¼	7¼	7¼
Lamb, 3rd quality, all States .. .. 28 lb. and under	7¼	7⅛	7⅛	7⅛
Lamb, 3rd quality, all States .. .. 29 lb. and over	6¾	6⅝	6⅝	6⅝
Mutton wethers and/or maiden ewes .. Under 40 lb. ..	4¼	4⅜	4⅜	4⅜
Mutton wethers and/or maiden ewes .. 41–48 lb. ..	4	4	4	4
Mutton wethers and/or maiden ewes .. 49–56 lb. ..	3⅞	3⅞	3⅞	3⅞
Mutton ewes .. .. Under 40 lb. ..	4⅛	4¼	4¼	4¼
Mutton ewes .. .. 41–48 lb. ..	3¾	3¾	3¾	3¾
Beef, frozen ox hinds .. .. .. 145–210 lb. ..	4¼	4¼	4¼	4⅛
Beef, frozen ox crops, weights corresponding	3⅛	3¼	3⅜	3¼
Beef, chilled ox hinds .. .. 145–210 lb. ..	4⅞	5½	5½	5½
Beef, chilled ox crops, weights corresponding	3¾	3¾	4	3⅞
Pork, Australian 1st quality .. .. 60–80 lb. ..	7¼	7⅛	7¼	7⅛
Pork, Australian 1st quality .. .. 81–100 lb. ..	7¼	7⅛	7¼	7⅛
Pork, New Zealand, 1st quality .. 60–80 lb. ..	7¼	7¼	7¼	7¼
Pork, New Zealand, 1st quality .. 81–100 lb. ..	7¼	7⅛	7¼	7¼
	s.	*s.*	*s.*	*s.*
Bacon, Canadian .. .. .. per cwt. ..	83	83	85	85
Bacon, Empire (cured in England) .. per cwt. ..	83	83	85	85
Bacon, Danish .. .. .. per cwt. ..	90	90	92	92
Butter, unsalted, choicest grade .. per cwt. ..	155	144–146	126	116–118
Butter, unsalted, 1st grade .. .. per cwt. ..	154	..	124	..
Butter, unsalted, 2nd grade .. .. per cwt. ..	..	..	..	..
Butter, unsalted, pastry grade .. per cwt. ..	..	..	6	..
Butter, salted, choicest grade .. .. per cwt. ..	150–151	135–138	120–121	112–113
Butter, salted, 1st grade .. .. per cwt. ..	149–150	134–135	119–120	110–111
Butter, salted, 2nd grade .. .. per cwt. ..	148–149	133–134	117–119	109–110
Butter, salted, pastry grade .. .. per cwt. ..	146	130	114–115	104–105
Butter, Danish .. .. .. per cwt. ..	157	147	139	142
Market (butter)	Quiet	Weak and irregular prices nominal	Closing steadier following further sharp decline	Steady at the lower prices

Orchard and Garden Notes

By J. L. Provan, B.Agr.Sc., Horticultural Research Officer.

Clematis.

The Orchard.

DURING December harvesting of early varieties of peaches, e.g., Mayflower, Sneed, Le Vainqueur, Briggs, High's, Pickering, Anzac, and Hale's, and the majority of apricots, together with early plums, will occupy the attention of growers of these fruits. Late varieties of cherries such as Bigarreau de Hollande, Black Diamond, Reine Hortense, Bigarreau Napoleon, Florence and St. Margaret will be picked during the first week of December and so conclude the cherry crop for this season.

Ammonium polysulphide at a strength of one gallon to 80 gallons of water plus 3 lb. of soft soap, can be applied to cherries and peaches (but *not* apricots) up to the day before picking, as a control for brown rot.

In some districts, where lure pots indicate late flights of moths of the spring brood, the maintenance of lead arsenate cover sprays, or the application of white oil ovicide sprays will be necessary. Last season, to control these late flights it was essential to apply sprays during the first or second week of December. Growers desiring information on the application of sprays should communicate with the district orchard supervisor.

The addition of 1 pint of nicotine sulphate to the arsenate of lead spray (5 lb. paste in 80 gallons) or the white oil spray (1⅓ gallons in 80 gallons) will effectively control red spider, providing the spray is directed to the underside of the leaves. This spray will also provide good control of the apple leaf hopper (canary fly) which has appeared in the Stanley and Harcourt districts. In New Zealand the apple leaf hopper is checked by an egg parasite, and this parasite recently was introduced into Tasmania. Its progress is being watched by officers of this Department with interest.

Apple and pear trees should be banded with either chemically treated, or thick hessian bands, before the second week of December. All other forms of shelter such as loose bark, and rubbish in the forks of the trees, should be removed to encourage the codling moth larvae to pupate in the bands. Hessian bands should be thick, because the larvae prefer darkness. These bands require inspection every ten days. Chemical bands require little attention and cost approximately 1¼d. per tree for material, application and removal at the end of the season. Where birds destroy chemical bands they should be wired on or covered with a narrow strip of 1-in. mesh wire netting. On demonstration plots last season over 50,000 larvae were destroyed by bands.

Citrus trees, which were cut back in September for re-working purposes, should be examined and any surplus growth removed. Retain only six to eight vigorous growths, suitably located, for budding in the autumn. The harvesting of Late Valencia oranges will be continued during December, and growers should make early arrangements for fumigation or white oil spraying for the control of red scale.

Instructional circulars dealing with the control of codling moth and black spot are available free on application to the Director, Department of Agriculture, Treasury Gardens, Melbourne, C.2.

Cutworms on Vines.

(The Viticulturist has supplied the following note on cutworms.)

During November and December the cutworm, or night grub, is likely to become a serious pest in vine nurseries and in one- and two-year-old plantations. Cutworms are

always present in older vineyards but their presence is seldom of any account. The eggs of the cutworm moth (genus *Agrotis*) are laid in the early spring on any green growing matter. During the first month or two after hatching the young caterpillars are so small and eat so little that their presence is not obvious.

During the day they lie buried in the soil near the base of the host plant, and at night crawl up the stem of the plant and feed upon the leaves and green shoots. Four or five full-grown caterpillars are sufficient to kill a young vine at this time of the year unless precautions are taken. They are readily destroyed by the use of poisonous baits.

The best bait mixture is made as follows:—Add 1 lb. of Paris green and 5 lb. of treacle to 2 gallons of hot water, then stir freely and add sufficient bran to absorb the liquid. Baits about the size of a marble are dropped at the stem of each plant, preferably at nightfall. Calcium arsenate does not make quite as good a bait as Paris green, and lead arsenate is relatively ineffective. The full-grown caterpillars are about an inch long, smooth and greyish-brown in colour. They readily attack the bait, become comatose, and die several days later.

The Flower Garden.

Dahlias can be planted early in December, although quite a lot of planting has already occurred. The hole should be about 8 inches square and about 6 inches deep, and if a handful of blood manure is incorporated in the soil the dahlia plant will receive a good start. Five or 6 feet, 1-in. x 1-in. jarrah or red gum stakes should be placed in position and the dahlia tuber placed against the stake in such a way that the bud or "eye" is near the stake. Do not water heavily after planting. When dividing dahlia tubers, they should be separated by a cutting and breaking action. This will ensure that a tuber with an "eye" will be obtained.

Gladioli corms may now be planted for the production of autumn blooms, and a very good practice prior to planting is to clean the corms by removing the scaly coverings and to immerse them for two hours in a solution made by dissolving ¼ ounce of corrosive sublimate in a little hot water, in a wooden or enamel vessel, adding sufficient water to make 3¼ gallons. This solution will prevent the spread of "hard corm." Corms which are badly infested with black or brown diseased areas should be burnt. Corms should be spaced at least 6 inches apart and set 3 inches deep in the soil.

Where snails are troublesome in the garden a mixture of calcium arsenate, bran and treacle will be found effective. This bait is made by mixing a heaped tablespoonful of calcium arsenate with 1 lb. of bran, dissolving about a tablespoonful of treacle in a small quantity of hot water and adding this solution slowly to the bran and arsenate, and stirring continuously. Add only sufficient of the liquid to wet the bran, but the mixture should remain quite crumbly. This can be broadcast in the evening, preferably when light rain or dews are expected.

The old flowering stems of irises should be removed. Zinnias and Phlox Drummondi seedlings can be planted out early in December, and perennial phlox should be tied up if necessary.

Roses will require a light pruning after flowering has finished, and the old flowering shoots of the Wichuriana roses—Dorothy Perkins, Hiawatha, Excelsa and American Pillar—will require to be removed and the new growth trained into the required position for flowering next year. Arrangements should be made for the application of well decayed manure as a mulch in the garden during the hot summer months.

The Vegetable Garden.

Rhubarb and asparagus beds should be well manured and watered, and, owing to the restricted nature of the roots of the rhubarb plant, the manure should be concentrated close to the plant. In the case of asparagus it should be remembered that only by encouraging a healthy top growth for the remainder of the year will the crowns beneath the ground be able to store up supplies to produce good shoots for cutting next spring. A few pounds of blood and bone manure, or 2:2:1 mixture of superphosphate, sulphate of ammonia and potash, applied to each bed, will be found beneficial for both these plants.

Tomato plants which are being trained to single or double stems on stakes will require constant attention. Side shoots should be nipped off while still quite small, and the main shoots tied to the stakes. Tomatoes require heavy manuring, and an occasional handful of 2:2:1 manure, or blood and bone, around each plant, and a mulch of stable manure, will be found beneficial. Of the new varieties of tomatoes—Red Marhio, Market King, Sensation, and Recruit will require only

one or two leaders (main stems) per plant. Eccles Surprise should be pruned very lightly and does best when at least three leaders per plant are retained.

Preparation of beds for sowing in early autumn should be commenced, because seeds of carrot, parsnip, cabbage, and cauliflower require early sowing.

Book Review

POTASH DEFICIENCY SYMPTOMS

By Prof. O. Eckstein, Dr. A. Bruno and Dr. J. W. Turrentine. (235 pp. 54 coloured plates 41 figures) Australian orders through Pacific Potash Limited Sydney, 12/6.

IN Australia potash fertilizers are as yet used only in limited amounts, but in the Old World countries their value is well known. Recent experiments in Victoria have demonstrated the inability of a considerable area of improved pasture land to maintain its increased fertility unless phosphatic manuring is supplemented by a potash fertilizer; this gives special value to the book under review, for it deals largely with the symptoms by which acute potash deficiencies may be detected.

The text is in English, French, and German, and full indices are given in each language. Charts are included showing the relative amounts of the various plant foods removed by different crops. Chapters are devoted to the external symptoms, and modification of the inner structure of the plant brought about by potash deficiency, and the consequent effects of plant diseases, pests, and lowered quality.

Many excellent reproductions of photographs show the alterations in plant structure due to potash deficiency. Potash deficiencies are frequently reflected in lack of vigorous growth, but where the plants are adequately supplied with other nutrients characteristic leaf scorch and markings may occur. The ability to recognize these signs when they appear in special crops should enable steps to be taken to overcome the deficiency. The final section of the book consists of a splendid collection of natural colour photographs illustrating the external symptoms by which a potash deficiency may be recognized in most crops.

The publication of this book at a time when the occurrence of a potash deficiency on the poorer soils in the higher rainfall districts of the State appears imminent should make it of unusual interest to those concerned with the maintenance of soil fertility.

Its price is 12s. 6d., and orders may be sent through Pacific Potash Limited, Sydney.

Grazing Irrigated Pastures

An important point in pasture management is to guard against over-grazing. Cattle do not offend in this respect so much as sheep. Apparent uniformity can be obtained by grazing a pasture to nearly ground level. Under such circumstances, however, as much selective grazing can occur as when a pasture is under-stocked. When left on a pasture too long, the stock concentrate on certain species—usually the best, such as white clover—and may punish those species so severely that the plants suffer a decided check to their development. Bare patches appear and afford opportunities for the establishment of weeds.

In the northern irrigation areas, the majority of soils are of a heavy type which tend to crack on the surface when drying out. The preservation of a sufficient amount of cover through taking care not to over-graze will result in the reduction of evaporation, and a more economical use of the irrigation water. To an extent, the longer and more mature herbage offering will have the effect of maintaining better health among the animals.

The Cool Storage of Peaches

In Air and Artificial Atmospheres

*By *F. E. Huelin, B.Sc., Ph.D.; †G. B. Tindale, B.Sc.Agr.; and *S. A. Trout, M.Sc., Ph.D.*

EXPERIMENTAL work on the cool storage of peaches in air and artificial atmospheres was initiated at the Government Cool Stores, Melbourne, by the Victorian Department of Agriculture. In 1932, the Advisory Committee on Fruit Storage Investigations, comprising representatives of the Commonwealth Council for Scientific and Industrial Research and the Victorian Department of Agriculture, was formed. The experiments have since been carried out under the direction of this Committee. All work has been conducted at the Government Cool Stores, except for a preliminary experiment on "gas" storage, which was carried out in the Biochemistry Department of the University of Melbourne, and the following is a progress report of these investigations.

Dessert peaches in Victoria are grown mainly in the metropolitan districts near Melbourne, and the experiments under review were conducted with fruit from Doncaster in this locality. Peaches are also grown in the Goulburn Valley, but the varieties from this district are almost exclusively used for canning. The peaches from Doncaster are sold, mainly, in the local market, and cool storage has had very little application in this industry, as several varieties are grown, which mature in succession from early December to the end of March. However, if peaches could be stored successfully for several weeks, it would be possible to extend the local season and find further markets for the industry by export. The average time of shipment from Melbourne to England is about six weeks, and to allow for delays, a somewhat longer storage life (about eight weeks) would be required. If high quality peaches from Doncaster could be placed on the London market in a first-class condition, they should realize good prices, particularly after the bulk of the South African peaches had been marketed.

Experimental Procedure.

Preliminary experiments showed that peaches could be handled satisfactorily only if picked while still firm and stored promptly at a low temperature. In 1935, peaches were picked at three stages of maturity. The least mature peaches were still quite green with very little blush. The others, though still firm, were definitely more coloured. The original green was fading, but there was a definite blush. In the most mature peaches, the amount of blush was considerable. It was possible to pick all three maturities on the same day, as the peaches on a tree do not mature uniformly, the outer and more exposed fruit being generally more advanced. The least mature peaches failed to ripen normally after picking, becoming juicy after a few days at 65° F., but remaining sour and flavourless. Hence, in subsequent years the two later maturities only were picked.

In many cases, the colour and firmness of each maturity were recorded. The ground colour was determined by reference to Maerz and Paul's "Dictionary of Colour", and is recorded as four stages of colour, i.e., 1—deep green; 2—green, with trace of yellow; 3 and 4—green yellow. The extent of the blush was expressed in percentage of the total area of the fruit covered. The firmness was measured with a standard U.S. pressure tester, having a plunger 5/16 inch in diameter, and was expressed in terms of the pressure required to force the plunger into the flesh.

In a few cases, information was obtained on the soluble solids and acid content of the juice of each maturity, using a sample of twelve fruits. After grinding the flesh, the juice was squeezed out through muslin. The soluble solids were determined with a Brix hydrometer, and the acidity estimated by titration. Determinations of sugar content by the method of Bertrand were made in one experiment.

The peaches were stored at 32° F. and 34° F. At these temperatures the fruit failed to ripen, and samples were removed at weekly intervals to 65° F., at which temperature they ripened in about five days. The storage life is the period within which the peaches can be removed to 65° F., and still ripen normally, i.e., become juicy

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and develop their characteristic flavour. If stored for a longer period, the peaches fail to ripen normally on removal to 65° F., but soften to a mealy, dry, and flavourless condition. If considerably overstored, the flesh becomes red in the neighbourhood of the stone. Finally, reddening develops throughout the flesh, and the skin separates from the flesh on the slighest pressure.

As the storage life of most varieties of peaches in air at 32° F. and 34° F. is comparatively short (about five weeks), attempts were made to prolong it by the "gas" storage method of Kidd and West[2]. After fruits are picked, they continue to absorb oxygen and liberate carbon dioxide. In a closed container filled with fruit, it is therefore possible to maintain a definite percentage of carbon dioxide together with a reduced concentration of oxygen. In its simplest form, the method involves restricting the ventilation so as to allow the carbon dioxide to accumulate to a definite level. As most fruits produce carbon dioxide and absorb oxygen in approximately equal amounts, the oxygen is reduced below its concentration in ordinary air (21 per cent.) to about the same extent as the carbon dioxide is increased. Hence atmospheres with 5 per cent. and 10 per cent. of carbon dioxide would contain 16 per cent. and 11 per cent. of oxygen respectively.

"Gas" storage by the method or reduced ventilation was carried out in small galvanized iron containers. Each container was fitted with a tube in the lid and another near the bottom for ventilation purposes. After packing the fruit into the container, a gas tight seal was made by fitting the lid into a water channel around the outside of the rim. The desired atmosphere was obtained by passing in a measured amount of a gas mixture containing 21 per cent. of carbon dioxide and 79 per cent. of nitrogen. Ventilation occurred by diffusion into the open tubes, and was controlled by attaching narrow glass tubes of various lengths to the top tube. The rate of diffusion was progressively reduced as longer tubes were used.

In 1937, peaches were also stored in the following atmospheres, which could not be obtained by controlled ventilation:—

—	Mixture 1.	Mixture 2.	Mixture 3.
	%	%	%
Carbon dioxide ..	5	5	10
Oxygen	10	5	5

The fruit was stored in gas-tight cabinets containing these atmospheres, which were obtained by mixing air with various proportions of nitrogen and carbon dioxide. The atmospheres had to be adjusted occasionally by ventilating with air or nitrogen. If the cabinets were ventilated exclusively with air to maintain the carbon dioxide at 5 per cent., the oxygen would tend to rise to 16 per cent., and ventilation with nitrogen was also necessary in order to prevent this rise. The storage life in the artificial atmospheres was determined by weekly removals to 65° F. for ripening.

Maximum Cool Storage Life in Air.

The storage results for several varieties of peaches are given in Table 1, together with the colour and firmness at picking and maximum eating quality when ripe. In most cases two maturities were picked, and the variation due to maturity is indicated in the Table.

The more mature peaches had generally a higher colour, a lower pressure, better eating quality on ripening, and a slightly shorter storage life. The results for each variety show remarkable variability from year to year. For successful export to England, a cool storage life of about eight weeks is necessary. This was obtained in the case of four varieties in 1935, but the storage life has been much shorter in other years. No reason for this variation has been established, but it is probable that peaches have the best keeping quality when they develop a good colour on the tree before any appreciable softening occurs. It is interesting to note that the Zerbe peaches obtained in 1937, which ripened to a rather poor quality and had a comparatively short storage life, gave about the lowest value with the pressure tester of any recorded at picking.

It would appear that a storage life sufficient for export cannot be obtained consistently by the use of refrigeration alone.

Optimum Maturity for Storage.

The more coloured peaches invariably ripen to a better quality, but the fruit cannot be picked too mature without serious reduction in the storage life. Consideration of the results in Table 1 suggests that if these varieties are to ripen satisfactorily, they should not be picked until the original green has faded to a slightly yellowish green (stage 2½), and a noticeable blush has developed. They might be picked a little more mature with consequent gain in quality,

TABLE 1.—THE COLOUR AND PRESSURE OF PEACHES FROM DONCASTER AT PICKING IN RELATION TO QUALITY AND THE STORAGE LIFE AT 32° F. AND 34° F.

Variety.	Date of Picking.	Condition at Picking.			Quality when Ripe.	Storage Life in Weeks at—	
		Ground Colour.	Extent of Blush.	Pressure.		32° F.	34° F.
			%	lb.			
Wiggin	10.1.35	..	..	..	fair	4 to 5	..
Wiggin	15.1.37	2 to 2¼	20 to 30	13 to 14	very poor	4 to 5	3
Pump	12.1.34	..	..	..	fair	4½	..
Pump	10.1.35	..	..	..	fair	7 to 8	..
Zerbe	10.1.35	..	..	..	fair	7 to 8	..
Zerbe	13.1.36	4	60	17 to 18	fair to good	6 to 7	5 to 6
Zerbe	15.1.37	3 to 3½	30 to 40	10 to 14	poor to fair	4 to 5	3
Smith's	2.2.33	..	..	..	fair	..	3
Smith's	5.2.34	..	..	..	fair	4	..
Smith's	26.1.35	2½	30 to 60	19 to 20	fair to good	7 to 8	3
Smith's	21.1.36	2¼	30 to 60	19 to 20	fair to good	5 to 6	4 to 5
Millicent	5.2.36	2¾	75	16 to 17	fair to good	6 to 7	5 to 6
Catherine Anne	10.2.37	3	85	17 to 18	good	7	5
Late Crawford	11.2.35	..	..	..	fair to good	10 to 11	5
Late Crawford	7.2.36	3 to 4	60 to 90	15 to 17	fair to good	8 to 9	6 to 7
Late Crawford	15.2.37	4	70	17 to 18	fair	6	4

but it is essential that there should be no signs of softening. It would probably be best to avoid picking fruit of less than 15-lb. pressure for storage purposes.

With advancing maturity there are also changes in sugar and acid[1]. The results of chemical analyses of the three maturities of Smith's peaches in 1935 are given in Table 2. The first is definitely immature. The acidity is calculated in terms of malic acid.

TABLE 2.—THE SUGAR AND ACID CONTENT OF SMITH'S PEACHES FROM DONCASTER AT PICKING. PICKED 26TH JANUARY, 1935.

Maturity.	Reducing Sugar. (Percentage).	Cane Sugar. (Percentage).	Total Sugar. (Percentage).	Acid (Percentage).
First	1·9	6·14	8·04	0·828
Second ..	1·83	6·66	8·49	0·75
Third ..	1·85	7·6	9·45	0·752

The increase in sugar with maturity is primarily associated with an increase in cane sugar, and there is a decrease in acidity. The soluble solids content of the juice, as determined by a Brix hydrometer, is more commonly used as a guide to the sugar content, and further determinations of the soluble solids and acid content of the juice are given in Table 3.

TABLE 3.—THE SOLUBLE SOLIDS AND ACID CONTENT OF PEACHES FROM DONCASTER AT PICKING.

Variety.	Date of Picking.	Maturity.	Soluble Solids. (Brix).	Acid. (Percentage).
Wiggin ..	15.1.37	First	8·4	1·19
		Second	9·0	0·98
		Third	10·7	0·86
Zerbe ..	15.1.37	First	9·0	1·28
		Second	12·2	1·17
		Third	13·5	1·09
Smith's ..	21.1.36	Second	11·6	0·86
		Third	12·5	0·81
Late Crawford ..	15.2.37	First	12·8	0·7
		Second	13·4	0·7

The results all show a tendency for the soluble solids to increase and the acidity to decrease as the fruit matures, but the data are too limited to indicate whether these determinations are of any value as a guide to maturity.

Gas Storage.

"Gas" storage by the method of controlled ventilation has consistently increased the storage life at low temperatures beyond that obtained by refrigeration alone. "Gas" stored peaches have also taken two to three days longer than the air stored controls to ripen at 65° F. after removal from low temperatures. Results for the maximum storage life in air and "gas" storage at 32° F. and 34° F. have been obtained over several years, and are given in Table 4. The best results have always been obtained at the lower temperature (32° F).

The "gas" storage work summarized in Table 4 was carried out under conditions of reduced ventilation in atmospheres containing various concentrations of carbon dioxide up to 15 per cent. In atmospheres containing up to 10 per cent. of carbon dioxide, the storage life was increased, but the types of deterioration which accompanied the end of the life were similar to those occurring in peaches stored in air, i.e., loss of flavour, mealiness, and reddening of the flesh. The results show that the maximum storage life was obtained in an atmosphere containing 8 to 10 per cent. of carbon dioxide. The carbon dioxide should not be allowed to rise above 10 per cent. as the storage life was sometimes less at higher concentrations. Definite injury occurred in the presence of 15 per cent of carbon dioxide, and the life was terminated through the development of slight discolouration and a fermented taste on ripening.

When the ventilation is controlled so as to maintain the carbon dioxide at a concentration of 8 to 10 per cent., the oxygen concentration becomes 11 to 13 per cent. The experiments in 1937 were extended with each variety to include the use of atmospheres containing 5 to 10 per cent. of carbon dioxide, and with the oxygen as low as 5 per cent., but, in these atmospheres, the storage life was the same as that obtained under the optimum conditions of reduced ventilation.

In the majority of the tests summarized in Table 4, practically the maximum storage life has been obtained in an atmosphere containing 5 per cent. of carbon dioxide and 16 per cent. of oxygen. This only involves reduction of the oxygen content of the atmosphere to three-quarters of its normal value (21 per cent.) while the concentration of carbon dioxide is increased to about 100 times its value in ordinary air (0·04 per cent.). Hence it is reasonable to assume that the increased storage life is mainly due to the presence of carbon dioxide in the atmosphere. This assumption is confirmed by the fact that the storage life has not been appreciably increased by reducing the oxygen content of the atmosphere from 16 per cent. to 5 per cent., while maintaining the carbon dioxide at 5 per cent.

If the storage life is primarily a function of the carbon dioxide content of the atmosphere, gas storage of peaches would be fairly simple in application. Peaches could be shipped overseas

TABLE 4.—STORAGE OF PEACHES FROM DONCASTER IN AIR AND IN ARTIFICIAL ATMOSPHERES CONTAINING CARBON DIOXIDE (CO_2). MAXIMUM STORAGE LIFE AT 32° F. AND 34° F.

Variety.	Date of Picking.	Temperature. °F.	Storage Life in Weeks in—						
			Air.	4 per cent. CO_2.	5 per cent. CO_2.	8 per cent. CO_2.	10 per cent. CO_2.	12 per cent. CO_2.	15 per cent. CO_2.
Wiggin ..	15.1.37	32	5	..	12	13	13	..	..
Zerbe ..	13.1.36	32	7	8½	..	8½	..	8½	..
	13.1.36	34	6	6	..	8	..	8	..
	15.1.37	32	5	..	12	13	13	..	..
Smith's ..	2.2.33	34	3	..	8	..	8	..	..
	26.1.35	34	3	..	4½	..	6	..	4
	21.1.36	32	6	8½	..	9½	..	6	..
	21.1.36	34	5	6½	..	6½	..	5½	..
Millicent ..	5.2.36	32	7	7½	..	9	..	9	..
	5.2.36	34	6	7	..	8	..	8	..
Catherine Anne ..	10.2.37	32	7	..	13	13	14	..	..
Late Crawford ..	11.2.35	34	5	..	7½	..	7½	..	4
	7.2.36	32	9	11	..	13	..	12	..
	7.2.36	34	7	8	..	9½	..	9½	..
	15.2.37	32	6	..	10½	10½	11½	..	..

in gas-tight holds, such as are used for chilled beef, and the carbon dioxide maintained at 8 to 10 per cent. by adding the gas to the atmosphere from cylinders and ventilating if its concentration tended to rise above 10 per cent. The fruit would, of course, need to be promptly cooled in refrigerated stores immediately after picking, and should be at a temperature of not more than 35° F. (approx.) at the time of loading into the ship.

As the best results have been obtained by reduced ventilation with a carbon dioxide concentration of 8 to 10 per cent., the storage life in this atmosphere is given in Table 5, together with the corresponding storage life in air.

TABLE 5.—STORAGE LIFE OF PEACHES AT 32° F. AND 34° F IN AIR AND IN THE OPTIMUM CONCENTRATION OF CARBON DIOXIDE (8 TO 10 PER CENT. CO_2).

Variety.	Date of Picking	Storage Life in Weeks at—			
		32° F.		34° F.	
		Air.	8 to 10 per cent. CO_2.	Air.	8 to 10 per cent. CO_2.
Zerbe ..	13.1.36	7	8½	6	8
Zerbe ..	15.1.37	5	13	..	..
Wiggin ..	15.1.37	5	13	..	..
Smith's ..	2.2.33	..	..	3	8
Smith's ..	26.1.35	..	..	3	6
Smith's ..	21.1.36	6	9	5	6½
Millicent ..	5.2.36	7	9	6	8
Catherine Anne ..	10.2.37	7	13	..	..
Crawford..	11.2.35	..	..	5	7½
Crawford..	7.2.36	9	13	7	9½
Crawford..	15.2.37	6	11	..	..

The results for gas storage show as much variation as those for air storage, but it is apparent that in gas storage at 32° F. the storage life has been consistently greater than eight weeks, which is necessary for export. The temperature must be kept constant at 32° F., as at 34° F. the storage life has sometimes been appreciably less.

Experimental Shipment.

Recently, boats have been specially built for the rapid transport of refrigerated cargo between Australia and England. On several occasions refrigerated cargoes have been transported from Melbourne to London in four and a half weeks, compared with the usual six weeks or even longer. With such a relatively short shipping period, the export of the longer keeping varieties of peaches becomes possible, even without the use of carbon dioxide. By way of a demonstration, a small experimental shipment of Late Crawford peaches was made in 1937 on one of the above boats. These peaches were picked at Doncaster, immediately pre-cooled, packed in trays, and promptly shipped at a temperature of 30 to 32° F.

Arrangements were made for inspection and ripening of the fruit on arrival in London. The peaches arrived in good condition, ripened satisfactorily, and realized approximately fivepence each wholesale. So far as is known, this is the first successful shipment of peaches from Australia to England. In the past other trial shipments have been made (on slower boats), but the peaches developed internal discolouration shortly after arrival, as the storage life was over.

Other Storage Problems.

The end of the physiological storage life is indicated by failure to ripen normally on removal to higher temperatures, but before this stage is reached serious wastage can occur from brown rot. The maximum life in refrigerated "gas" storage can only be obtained if this disease is satisfactorily controlled. Brown rot was particularly prevalent in the Zerbe peaches obtained in 1936, and the Crawford in 1937.

The control of this fungus is essential, particularly by measures in the orchard and by selection of fruit from orchards which are as free from the disease as possible. The only type of control attempted during storage has been the use of iodized wraps prepared by the method of Tomkins.[3] Unfortunately, iodine was not effective in controlling brown rot, but caused skin blemishes and rendered the fruit inedible.

The peaches have mainly been ripened on removal from storage at 65° F., but fruit sent to England would arrive there in March and April, when warehouse temperatures would be about 45° F. only. Of the varieties investigated, only the Catherine Anne has ripened at 45° F. Most of the other varieties required a considerably higher ripening temperature, and would probably require a preliminary treatment at higher temperatures on arrival in England.

These results offer definite promise for the storage and possible export of peaches, but further work is necessary along the following lines:—

1. Better control of brown rot by measures in the orchard, such as spraying and orchard sanitation.
2. The use of antisceptic materials in wraps, &c., for the control of brown rot.

3. Gas storage of several varieties on a larger scale, under optimum conditions.
4. Determination of the treatment necessary to ripen each variety in England.

Summary.

1. For successful storage, peaches should be picked when showing a considerable amount of blush, but still quite firm, and stored promptly at 32° F.

2. The average storage life of peaches stored in air at 32° F. was about six weeks, which is insufficient for satisfactory export to England.

3. By storing the peaches at 32° F. in a "gas mixture" containing about 8 to 10 per cent. of CO_2 the storage life can be increased by about 50 per cent. With this method of storage, the storage life should be sufficiently long to permit of safe export.

4. Peaches will not ripen at low temperatures, and hence require ripening at elevated temperatures after storage.

5. The storage of peaches is rendered difficult on account of the frequent development of brown rot on this fruit during storage, but more particularly during ripening.

The services of Messrs. E. Lawford and J. Tully in supplying the peaches used in these tests are gratefully acknowledged.

References.

1. Allen, F. W.—Hilgardia 1932, 6, 381.
2. Kidd, F., West, C., and Kidd, M.N.—Food Investigation Board, Special Report 30, 1927.
3. Tomkins, R. G.—J. Pom. Horticultural Science 1934, 12, 311.

Carbon-Tetrachloride Poisoning

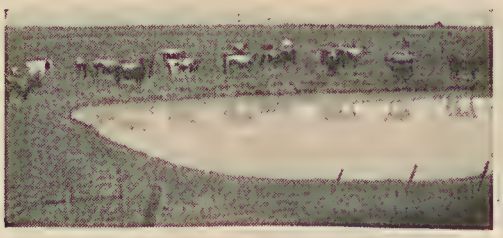
On rare occasions following the administration of carbon-tetrachloride considerable mortality has occurred in the drenched sheep. The reasons for this occasional toxity are not completely understood, but it is thought by some to be associated with calcium deficiency. Other possible factors are the administration of the drug before sudden cold changes, or the moving of sheep to strange paddocks after drenching.

The affected sheep exhibit symptoms of acute abdominal pain, and deaths occur in from three to four days.

It should be remembered that deaths may occur after drenching due to faulty administration of the drug, which results in the dose reaching the lungs instead of the stomach.

When sheep are to be drenched with carbon-tetrachloride, the following precautions should be observed:—

1. Always drench sheep in a standing position. Do not hold the tongue, and do not force back the head.
2. It is advisable to dose a small number of the flock three or four days before the main body; especially should this precaution apply to ewes forward in lamb.
3. Discontinue all feeding of concentrates, if practised, at least one week before dosing.
4. Use mineral licks if deficiency is suggested.
5. Drench early in the day, and do not change pastures suddenly before or after drenching. Always return sheep after drenching to the paddock they were in before drenching.
6. Choose suitable weather.
7. Only use carbon-tetrachloride of a reliable brand known to be uncontaminated, fresh, and free from impurities.



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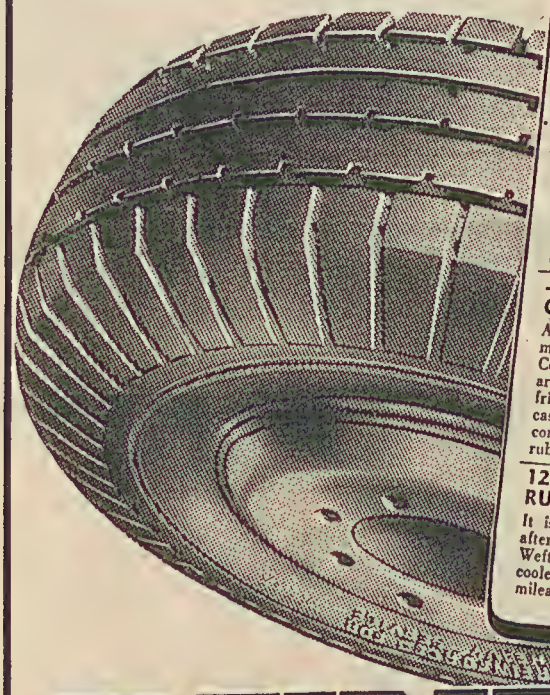
The list of 6 *extra* features at right provides ample reason in itself why you should fit Dunlop Giant "90's". These features are some of the reasons why Giant "90's" give such remarkable mileage, greater reliability under all road conditions, a proved non-skid tread, lower maintenance costs.

Have no truck with tyres that can't offer these advantages!

HAVE NO TRUCK WITH INFERIOR TYRES—FIT DUNLOP GIANT "90".



Here it is!

	DUNLOP "90"	OTHER TYRES
TRACTIVE PATTERN THROUGHOUT TREAD LIFE — The Dunlop Giant "90" is still non-skidding even when tread is worn smooth at centre. Grip is then provided by the shoulder blocks which bite into the road.	Yes	?
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HEAVIER SHOULDER BUTTRESSES — Dunlop Giant "90's" shoulder buttresses are extra heavy rubber foundations which enable the shoulders to add extra traction, extra mileage and extra side-wall protection.	Yes	?
WEFTLESS CORD CASING — of Dunlop Giant "90" Truck Tyre eliminates the destructive heat which saps the life of ordinary tyres. Weftless Cord construction gives—	Yes	?
—52% LONGER CASING LIFE — Another remarkable advantage made possible by the Weftless Cord casing of Giant "90"! There are no wefts (cross cords) to cause friction and undue wear. Each casing cord in the Giant "90" is completely insulated in pure rubber.	Yes	?
12½% COOLER RUNNING — It is a cold fact, proved by test after test, that Dunlop Giant "90's" Weftless Cord casing gives 12½% cooler running—consequently more mileage for your money.	Yes	?

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Standard Herd Records

For Quarter ended 30th September, 1937

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 394, of which 268 qualified for the certificate. The figure in brackets after the owner's name shows the number of entries.

The amount of butter-fat required for qualification varies with the age class to which the animal belongs, the standard being as follow:—

Junior 2 year old (under 2½ years at time of calving)	230 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	250 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	270 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	290 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	310 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	330 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

(Except where otherwise stated, the period of test was 273 days.)

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Abrecht, H. L., Morwell, Jersey (3).										
Rintoul View Sadie 2nd ..	45926	30.9.36	5½	6,033	5·42	327·33	270	Jr. 3	.. ..	Rintoul View Sapper
*Rintoul View Sapper's Fairy	45929	23.10.36	4	4,516	5·53	249·81	290	Sr. 3	.. ..	Rintoul View Sapper
Yuleba Handsome Girl 2nd	Vol. 24	6.11.36	4½	4,332	4·98	215·95	230	Jr. 2	.. ..	Rintoul View Fancy's Twylish
Alston, N. B., Romsey, Jersey (9).										
†Craig Mohr Rose Petal	Vol. 24	1.10.36	4	3,300	5·05	166·74	230	Jr. 2	.. ..	Rosyth Jessie's Laird
Rosyth Bonnie Maid ..	50496	29.10.36	14	6,464	4·86	314·35	310	Jr. 4	249, 283 ..	Aveley Antony
Rosyth Brown Eyes ..	50497	3.11.36	8	4,718	5·50	259·68	310	Jr. 4	229, 258 ..	Aveley Antony
Rosyth Gay Grevillea ..	55120	6.10.36	10	6,186	5·18	320·61	270	Jr. 3	290 ..	Werribee Gaypiece
Rosyth Gay Princess ..	55121	18.12.36	14	5,424	5·43	294·77	270	Jr. 3	325 ..	Werribee Gaypiece
Rosyth Grevillea ..	46068	20.10.36	9	6,407	4·91	314·72	350	Mature	250, 300, 302	Aveley Antony
Rosyth Princess Rosalie ..	50505	30.9.36	11½	7,377	4·72	348·32	310	Jr. 4	256, 337 ..	Aveley Antony
Rosyth Sweetbread ..	50506	16.12.36	10	5,289	5·49	290·60	310	Jr. 4	235, 264 ..	Aveley Antony
Rosyth Tulip 2nd ..	Vol. 24	28·9·36	8½	4,564	5·24	239·01	230	Jr. 2	.. ..	Werribee Gaypiece
Atkinson, W. K., Swan Hill, Dairy Shorthorn (23).										
Willow Park Camelia 2nd	D.S.H.B.	4.11.36	26	11,036	3·55	391·49	350	Mature	288, 376, 427, 415, 439, 446, 491, 417	Willow Park Diamond
Willow Park Camelia 4th	D.S.H.B.	16.12.36	15	10,818	3·69	399·07	350	Mature	291, 337, 403	Willow Park Design
Willow Park Camelia 9th	D.S.H.B.	2.11.36	23½	8,745	4·11	359·74	310	Jr. 4	347, 393 ..	Willow Park Imperial 3rd
Willow Park Camelia 14th	D.S.H.B.	19.11.36	21	6,560	3·67	241·01	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Comet 7th ..	D.S.H.B.	1.10.36	18	11,517	3·69	425·48	350	Mature	284, 378, 446, 497	Willow Park Design
Willow Park Countess 4th	D.S.H.B.	2.11.36	14½	9,917	3·92	388·64	350	Mature	283, 364, 399, 380, 381, 449, 431	Willow Park Revenue
Willow Park Countess 9th	D.S.H.B.	18.11.36	26½	11,645	4·09	476·34	350	Mature	396, 489, 443	Willow Park Imperial 3rd
Willow Park Countess 18th	D.S.H.B.	2.11.36	16	5,676	4·06	230·21	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Dainty 12th	D.S.H.B.	4.10.36	20	7,312	3·76	275·21	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Damsel 2nd	D.S.H.B.	7.11.36	25	11,258	4·16	468·65	350	Mature	361, 452, 428, 531, 422, 502, 427	Willow Park Reflector
Willow Park Damsel 3rd ..	D.S.H.B.	29.11.36	28	11,165	4·21	470·29	310	Jr. 4	382, 430 ..	Willow Park Imperial 3rd
Willow Park Damsel 4th ..	D.S.H.B.	21.11.36	21	9,894	3·73	369·22	270	Jr. 3	257 ..	Willow Park Lustre 3rd
Willow Park Damsel 5th ..	D.S.H.B.	27.9.36	18	6,035	4·02	242·68	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Duchess 7th	D.S.H.B.	12.10.36	22	9,309	4·16	387·23	350	Mature	262, 265, 364, 346, 365, 433, 401, 385, 414	Willow Park Count
Willow Park Duchess 15th	D.S.H.B.	21.11.36	22	9,501	3·75	356·13	350	Mature	261, 352, 351, 353	Willow Park Eminent
Willow Park Duchess 19th	D.S.H.B.	12.11.36	28	11,553	3·56	411·41	350	Mature	403, 442 ..	Willow Park Governor
Willow Park Duchess 24th	D.S.H.B.	17.10.36	26	9,758	3·71	361·70	310	Jr. 4	303 ..	Willow Park Silvermine 4th
Willow Park Duchess 26th	D.S.H.B.	27.11.36	19½	8,507	4·28	364·19	270	Jr. 3	300 ..	Willow Park Imperial 3rd

* 240 days in test. † 210 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Atkinson, W. K., Swan Hill—*continued.*										
Willow Park Duchess 28th	D.S.H.B.	2.11.36	16½	6,020	3·97	238·91	230	Jr. 2	.. ..	Wicklesham Lord Barrington 5th (Imp.)
Willow Park Melba 4th ..	D.S.H.B.	20.10.36	27	12,267	4·08	500·00	350	Mature	333, 285, 362, 394, 480, 435	Willow Park Sovereign 2nd
Willow Park Melba 15th ..	D.S.H.B.	21.10.36	27½	9,621	4·43	426·08	290	Sr. 3	414 ..	Willow Park Lustre 3rd
Willow Park Melba 19th ..	D.S.H.B.	9.10.36	20	7,761	3·70	286·99	270	Jr. 3	.. ..	Willow Park Silvermine 4th
Willow Park Melba 22nd ..	D.S.H.B.	29.9.36	20	8,360	3·92	328·02	230	Jr. 2	.. ..	Willow Park Lustre 3rd
Ballarat Orphanage, Ballarat, Jersey (6).										
Orphanage Audrey's Molly 6th	Vol. 24	13.11.36	11	5,157	5·34	275·61	230	Jr. 2	.. ..	Retford King Bracken
Orphanage Laddie's Zaffarine	36858	29.10.36	15	6,497	5·24	340·58	350	Mature	371, 398 ..	Orphanage Laddie
Orphanage Mirthmaker 3rd	49972	20.12.36	17½	6,948	5·57	386·78	350	Mature	.. ..	Orphanage Quicksand's Prince
Orphanage V.C.'s Molly 3rd	54581	6.11.36	14½	6,963	4·77	332·40	270	Jr. 3	.. ..	Orphanage V.C.'s Trooper
Orphanage Zaffarine 4th	49978	20.11.36	12½	6,098	5·99	364·99	310	Jr. 4	.. ..	Jerseylea Quality Boy
Trawalla Clara 11th ..	42285	25.12.36	14	6,426	4·88	313·72	350	Mature	328, 272 ..	Kyora Substitute
Bassett-Smith, C., Kyabram, Red Poll (3).										
Temperley Dairy Plane ..	Vol. 9	9.10.36	12	7,031	4·47	314·38	250	Sr. 2	224 ..	Temperley Dairyman
Temperley Dove 2nd ..	3858A	29.9.36	7	7,224	4·27	308·45	350	Mature	268, 278, 296	Earl of Beaconsfield
Victoria Turban ..	2340A	29.10.36	10	8,270	4·19	346·75	350	Mature	298, 366, 421, 394, 355, 223, 264	Victoria Air Marshall
Belfield, Mrs. V. M., Coleraine, Jersey (2).										
*Toolang Princess ..	28513	12.10.36	4	4,320	5·17	223·44	350	Mature	225, 360, 242	Clover Flat Lassie's Beau 3rd
†Wootong Vale Golden Rose	25757	20.10.36	4	3,000	4·15	124·50	350	Mature	340, 355, 448, 406, 194	Gold Prince of Clover Flat
Bidgood Bros., Staghorn, Jersey (5).										
Staghorn Aldan's Clementine 2nd	50637	24.10.36	6½	5,653	5·58	315·38	310	Jr. 4	426 ..	La Sente's Lord Aldan (Imp.)
Staghorn Clementine's Gladness	46198	25.10.36	14	6,890	5·05	347·76	350	Mature	385, 411 ..	Werribee Northern Masterpiece
Staghorn Footprint's Clementine	Vol. 24	25.10.36	6	4,218	5·42	228·75	270	Jr. 3	.. ..	Staghorn Aldan's Footprint
Staghorn Lady Cello ..	46201	26.10.36	14½	6,524	5·00	325·91	290	Sr. 3	309 ..	La Sente's Lord Aldan (Imp.)
Staghorn Noble's Lotus ..	50643	17.10.36	17	6,187	4·82	298·01	310	Jr. 4	.. ..	Nancy's Noble (Imp.)
Biggar, R., Monomeith, Jersey (2).										
Myamyn Letitia 5th ..	54342	17.10.36	11	5,106	4·99	254·73	230	Jr. 2	.. ..	Glenavon Diana's Prince
Waiora Park Letitia 3rd ..	51058	4.10.36	15½	6,738	4·73	318·96	270	Jr. 3	.. ..	Glenavon Diana's Prince
Black, Mrs. A. J., Noorat, Jersey (1).										
Noorat Suntan	54486	8.10.36	20	6,758	4·74	320·09	230	Jr. 2	.. ..	Banyule Lord Silvair
Box, Dr. J., Estate of the Late, Whittlesea, Jersey (2).										
Toorongo Princess Mona ..	50904	24.11.36	16	6,527	5·56	363·13	310	Jr. 4	319 ..	Kantara Don Juan
*Toorongo Queen Bess ..	33010	29.10.36	4	4,695	5·71	268·25	350	Mature	355, 407, 344, 310	Ruhbank Larkspur's Admiral
Brisbane, J. W., Hallora, Jersey (1).										
Ewelme Eastern Elaine ..	43836	14.10.36	12½	6,586	5·46	359·72	350	Mature	256, 300, 272	Northern Master of Glen Iris
Broad, A. A., Sutton Grange, Jersey (8).										
Grangelea Damsel ..	36965	12.11.36	18	7,394	6·28	463·98	350	Mature	353, 430, 449, 428	Banyule Macon
Grangelea Rose 6th ..	53021	27.10.36	13½	5,172	5·35	276·84	230	Jr. 2	.. ..	Banyule Macon
Grangelea Rosebud 5th ..	36967	6.10.36	17	7,670	5·89	451·85	350	Mature	330, 370, 396, 392	Banyule Macon
Grangelea Rosebud 7th ..	48527	9.11.36	16	6,710	5·58	374·25	270	Jr. 3	279 ..	Banyule Macon
Grangelea Roseleaf 3rd ..	33041	27.9.36	17	8,306	5·70	473·80	350	Mature	326, 404, 399, 457, 481	Banyule Airo
Grangelea Rosella 4th ..	53024	22.11.36	18	6,356	6·15	390·98	270	Jr. 3	324 ..	Grangelea Cream Boy
Grangelea Velvet ..	Vol. 24	30.11.36	19	7,410	5·97	442·23	310	Jr. 4	.. ..	Grangelea Prosper 2nd
Grangelea Velveteen 2nd ..	53027	19.10.36	14	5,594	5·25	293·66	230	Jr. 2	.. ..	Banyule Macon
Butcher, F., Swan Hill, Red Poll (2).										
Maryville Elain	5048B	12.10.36	16½	6,038	4·53	273·27	230	Jr. 2	.. ..	Chandpara Ferdinand
Maryville Elva	3722A	15.11.36	17	8,049	4·42	355·68	290	Sr. 3	304, 402 ..	Victoria King Bird
Calf, A. J., Werribee South, Jersey (1).										
Kyora Gadget's Twinkle ..	Vol. 24	30.10.36	9	5,310	6·07	322·67	230	Jr. 2	.. ..	Gadget (Imp.)

* 240 days in test. † 120 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Chirnside, R. M., Whittlesea, Jersey (10).										
Mornmoot Clementine ..	41121	23.10.36	20	9,641	5·87	565·55	330	Sr. 4	331, 549, 563	Werribee Prince Madeira
Mornmoot Clementine 2nd	54242	15.11.36	15	6,746	5·37	361·97	230	Jr. 2	.. ..	Werribee Madeira's Ace
Mornmoot Clementine 3rd	54243	23.12.36	18	7,131	5·71	407·27	230	Jr. 2	.. ..	Werribee Madeira's Ace
Mornmoot Fancy Madeira 4th	54245	30.10.36	20½	6,990	5·90	412·07	230	Jr. 2	.. ..	Werribee Madeira's Ace
Mornmoot Princess Madeira	37071	6.10.36	40½	14,045	5·65	793·96	350	Mature	424, 572, 773, 794	Werribee Grandmaster
Mornmoot Princess Madeira 2nd	45268	27.10.36	14	8,867	6·43	570·35	290	Sr. 3	480, 584 ..	Mornmoot Starbright King
Mornmoot Princess Madeira 6th	54250	10.10.36	18	6,459	6·29	406·40	230	Jr. 2	.. ..	Werribee Prince Madeira
Mornmoot Satisfaction 2nd	Vol. 24	4.12.36	15	5,910	5·98	353·14	250	Sr. 2	.. ..	Werribee Jupiter
Mornmoot Starbright ..	45271	7.11.36	19	9,188	5·45	500·91	270	Jr. 3	427 ..	Mornmoot Mars
Werribee Prosperity ..	51184	2.11.36	17½	6,803	5·69	387·27	230	Jr. 2	.. ..	War Valour (Imp.)
Clarke, F. W., Toora, Jersey (1).										
Mer Vue Sister	Vol. 24	26.9.36	23	7,691	6·10	469·13	230	Jr. 2	.. ..	Woorayl Flashlight
Clark, P. W., Whittlesea, Jersey (2).										
Coodardy Gloria 3rd ..	37090	18.10.36	12	6,370	5·78	368·48	350	Mature	296 ..	Kantara Don Juan
Coodardy Gloria 4th ..	47691	23.10.36	7	5,684	5·01	284·84	310	Jr. 4	278, 267 ..	Kantara Don Juan
Colenso, L. W. R., Alvie, Jersey (1).										
Normandie Hawthorn 6th	54489	3.11.36	11½	5,282	4·88	257·75	230	Jr. 2	.. ..	Lucerne Vale Noble Master
Coughlin, C., Catani, Jersey (8).										
Dunalister Northern Fascination 3rd	43645	17.10.36	8½	5,402	5·95	321·62	350	Mature	313, 349 ..	Staghorn Butter's Masterpiece
Fairview Carman 3rd ..	37915	13.12.36	11½	5,286	5·23	276·44	350	Mature	246, 288 ..	Burnside Royalist
Glady's Park Dinah ..	52791	24.11.36	13½	5,186	5·98	310·05	250	Sr. 2	251 ..	Banyule Silverstrain
Glady's Park Gaiety Girl	48203	9.11.36	6	5,709	5·44	310·36	270	Jr. 3	325 ..	Werribee Bluebell's Masterpiece
Glady's Park Goldmine's Beauty 2nd	43937	5.12.36	20	7,434	5·28	392·36	330	Sr. 4	307, 401 ..	Werribee Bluebell's Masterpiece
Glady's Park Master's Petal 2nd	52793	10.11.36	15½	6,058	5·52	334·52	250	Sr. 2	282 ..	Werribee Bluebell's Masterpiece
Koorcena Lulu 4th ..	34102	29.11.36	10	4,359	6·14	267·68	350	Mature	296, 263, 297, 275	Koorcena Carrie 3rd's Delegate
Glady's Park Lettie 2nd's Bluebell	37140	30.10.36	6½	4,753	5·41	257·02	350	Mature	422, 419, 355	Werribee Bluebell's Masterpiece
Coulthard, J. L. and Sons, Whittlesea, Jersey (5).										
Brookfield Rosalind 22nd	47445	25.10.36	16	7,373	5·74	423·17	310	Jr. 4	347 ..	Brookfield Ewell
Kameruka Symbol ..	40477	21.11.36	20	7,040	5·05	355·67	350	Mature	281, 338 ..	Banyule Amplifier
*Strathview Buttercup 2nd	42056	27.11.36	4	4,335	4·24	183·75	350	Mature	289 ..	Pat of Belgonia
Strathview Buttercup 3rd's Iris	55323	30.9.36	7½	4,596	5·57	255·80	290	Sr. 3	248 ..	Bonnay Carrie's Nobleman
Walamba Dahlia ..	Vol. 24	2.10.36	11	4,385	5·31	232·84	230	Jr. 2	.. ..	Clarendon Eyre Brigadier 3rd
Crawford, Mrs. E., Traralgon, Jersey (1).										
†Balnell Noble Girl ..	47098	22.12.36	4	2,805	4·55	127·49	310	Jr. 4	190 ..	Coolooli Ryes Mozart
Creed, C. S., Werribee South, Jersey (4).										
Gladfield Bonnie ..	48206	6.12.36	15	6,560	5·04	330·34	270	Jr. 3	305 ..	Grangelea Dandy Mac
Grangelea Rosaleen ..	48524	29.9.36	18½	6,433	6·11	393·11	310	Jr. 4	330 ..	Banyule Macon
Grangelea Rosebud 6th ..	44179	17.10.36	12½	6,077	5·79	352·04	310	Jr. 4	286, 270 ..	Banyule Macon
Grangelea Velveteen ..	36968	20.10.36	11	6,474	5·71	369·48	350	Mature	309, 344, 352, 352	Glenoshea Renegade
De La Rue, N. C., Weering, Jersey (2).										
Lucerne Vale Master's Queen	40777	23.12.36	4½	5,664	5·34	302·50	350	Mature	279, 406, 382	Werribee Fancy Masterpiece
Lucerne Vale Masterpiece's Trixie 10th	49251	26.10.36	9½	5,571	6·43	358·04	130	Jr. 3	.. ..	Werribee Fancy Masterpiece
Department of Agriculture, Werribee, Friesian (7).										
Victoria Ballerina ..	Vol. 14	17.10.36	26	8,033	3·57	288·12	230	Jr. 2	.. ..	Victoria Joyous Mercedes
Victoria Choree	5105	1.11.36	26	10,055	3·55	357·13	290	Sr. 3	263 ..	Victoria Double Top
Victoria Domino Mercedes	Vol. 14	2.11.36	23	8,417	3·32	279·86	230	Jr. 2	.. ..	Victoria Joyous Mercedes
Victoria Ilkabelle ..	Vol. 14	1.10.36	31	11,091	3·46	384·19	250	Sr. 2	.. ..	Victoria Double Top
Victoria Ilkedes	3763	22.12.36	15½	11,042	3·47	382·95	350	Mature	381, 419, 490	Victoria Joyous Mercedes
Victoria Songstress ..	3768	10.10.36	6	16,535	3·06	506·34	350	Mature	347, 435, 468, 434	Victoria Joyous Mercedes
Victoria Sonora	Vol. 14	26.10.36	24½	7,654	3·44	262·94	230	Jr. 2	.. ..	Victoria Woodcrest Jo
Department of Agriculture, Werribee, Red Poll (13).										
Victoria Amaranth ..	3006A	23.11.36	10½	8,220	4·31	353·91	350	Mature	248, 287, 342, 343	Vice Regal
Victoria Asphodel ..	3008A	21.12.36	7	9,180	3·57	327·99	350	Mature	295, 322, 327	Dominion Bright Belgian
Victoria Clear Vision ..	3014A	29.11.36	10½	7,319	4·24	310·65	350	Mature	241, 328, 258	Dominion Bright Belgian
Victoria Decreet	3902AA	15.10.36	12½	6,873	4·13	283·90	290	Sr. 3	253 ..	Victoria Iraq

* 210 days in test. † 150 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire
Department of Agriculture, Werribee—*continued.*										
Victoria Eructation ..	3226C	14.10.36	12½	8,153	4·55	370·56	350	Mature	338, 369, 340, 365, 395	Victoria Volcano
Victoria Friesia ..	5030B	19.11.36	15	7,919	4·39	348·00	290	Sr. 3	264 ..	Victoria Royal Ringer
Victoria Nectarine ..	3917A	5.12.36	15	7,721	4·21	325·12	310	Jr. 4	254, 280 ..	Victoria Royal Ringer
Victoria Nicotina ..	3027A	28.10.36	11½	8,286	4·05	335·57	350	Mature	323, 320, 313, 352	Earl of Beaconsfield
Victoria Royal Red Cross ..	4506AA	17.10.36	16½	7,557	4·03	304·45	270	Jr. 3	214 ..	Victoria Royal Ringer
Victoria Royal Velvet ..	3518AA	13.10.36	8	7,007	4·30	301·38	350	Mature	247 ..	Victoria Royal Ringer
Victoria Venetia	4895A	2.12.36	17	6,519	4·69	305·88	270	Jr. 3	254 ..	Victoria John Bull
Victoria Vot	4049B	25.10.36	11	11,001	4·68	515·11	350	Mature	296, 369, 398	Victoria Vice Captain
Victoria Wild Rose ..	3042A	24.12.36	4½	6,869	4·25	292·27	350	Mature	228, 269, 313, 315, 100	Vice Regal
Desmond, J. J., Rochester, Jersey (4).										
Belgonia Peggy 7th ..	33276	5.12.36	10	6,771	5·46	369·86	350	Mature	312, 438, 369, 448	Aerial of Banyule
Macroom Graceful Duchess	C.R.	19.10.36	12½	6,476	5·03	325·96	250	Sr. 2	275 ..	Macroom Mortimer
*Macroom Peggy.. ..	44993	20.11.36	4	5,235	5·05	265·97	350	Mature	352, 415, 490, 334	Belgonia Battery
View Bank's Bonnie Mary	C.R.	5.10.36	10	5,321	6·04	321·50	230	Jr. 2	.. ..	View Bank's Bonnie Boy
Dookie Agricultural College, Dookie, Ayrshire (4).										
Dookie Lilac	27119	26.9.36	21½	10,469	3·72	389·40	330	Sr. 4	450, 348 ..	Dookie Emblem
Dookie Sappho	23672	29.9.36	14	12,101	4·83	584·05	350	Mature	451, 423, 545, 565	Dookie Beau
†Dookie Shirley	24815	26.9.36	4	14,107	3·55	501·10	350	Mature	466, 308, 495	Longerenong Laurie
Dookie Susanna	28300	26.10.36	10½	7,190	3·66	262·99	270	Jr. 3	294 ..	Dookie Emblem
Dwyer, G., Balwyn, Jersey (1).										
Karalee Linda 2nd	44643	3.12.36	16	5,498	5·70	313·43	350	Mature	256, 418, 339	Karalee Volunteer 4th
Enders, N. H., Stanhope, Jersey (3).										
Rintoul View Moleen ..	37338	23.11.36	28	9,465	6·52	616·67	350	Mature	495, 588, 676, 641	Banyule Triplane
Rintoul View Rosemary ..	38214	3.12.36	18	8,012	5·83	466·86	350	Mature	441, 450, 579, 477	Banyule Triplane
The Wattles Joy 6th ..	55513	2.10.36	28	5,146	5·27	271·25	230	Jr. 2	.. ..	The Wattles Biplane
Fairchild and Clutterbuck, Tinamba, Jersey (5).										
Vaucluse Daphne ..	51012	11.10.36	15½	7,453	6·96	518·72	310	Jr. 4	274, 323 ..	Vaucluse Duke 3rd
Vaucluse Empress 3rd ..	51013	15.12.36	23	7,286	5·37	391·51	290	Sr. 3	318, 336 ..	Somerville Concentration
Vaucluse Flower	28695	28.9.36	16	8,292	5·54	459·71	350	Mature	306, 410, 490	Jerseyholm Handsome Boy 9th
Vaucluse Kirsty 2nd ..	42367	18.11.36	21	7,280	5·61	408·14	350	Mature	232, 327, 328	Somerville Concentration
Vaucluse May	Vol. 24	29.9.36	11	5,192	6·51	338·17	270	Jr. 3	.. ..	Somerville Concentration
Findlay, T. R., Leitchville, Jersey (6).										
Leven Brae A'do Daisy 2nd	Vol. 24	28.9.36	14	7,046	5·23	368·70	230	Jr. 2	.. ..	Werribee Mikado
Leven Brae A'do Madeira ..	Vol. 24	3.10.36	16	7,988	4·75	379·73	230	Jr. 2	.. ..	Werribee Mikado
Leven Brae A'do Queenie ..	Vol. 24	28.10.36	12½	6,488	6·31	409·54	230	Jr. 2	.. ..	Werribee Mikado
Leven Brae Gay Clementine	44890	4.10.36	16½	7,655	5·80	444·01	330	Sr. 4	270, 327 ..	Werribee Gaypiece
Leven Brae Gay Mistress ..	44892	20.10.36	13	8,019	4·96	397·67	350	Mature	360, 355, 454	Werribee Gaypiece
View Banks Emmie ..	Vol. 24	26.9.36	12	4,898	6·29	308·32	230	Jr. 2	.. ..	View Banks Defiance
Fixter, A., Boisdale, Guernsey (1).										
Avonview Jessica ..	5212	10.11.36	13	4,028	4·46	179·60	230	Jr. 2	.. ..	Avonview Sandboy 2nd
Fixter, W., Boisdale, Jersey (1).										
Olivedale Pearl 2nd ..	49943	12.11.36	19	7,827	5·73	448·51	290	Sr. 3	369, 434 ..	Omatoroa Kingsford Smith
Foster Bros., Boisdale, Jersey (13).										
Ballara Madeira	23145	14.10.36	5	5,429	4·59	249·21	350	Mature	302, 309, 359, 373, 443, 401, 357	Werribee Madeira Cream's Masterpiece
‡Boisdale Blonde ..	38941	18.11.36	4	4,057	5·77	233·90	350	Mature	.. ..	Gladiator of Springhurst
Boisdale Countess ..	33345	2.10.36	4	5,424	5·29	286·90	350	Mature	214, 375, 404, 427, 429	Starbright's Prince of Glen Iris
Boisdale Fuchsia ..	43051	5.11.36	7	4,045	5·69	230·20	330	Sr. 4	353 ..	Gladiator of Springhurst
Boisdale Hazel	51845	28.9.36	10½	4,801	4·43	212·69	230	Jr. 2	.. ..	Boisdale Dazzler
Boisdale Madeira.. ..	28701	3.11.36	4	3,409	4·75	161·85	350	Mature	245, 285, 303	Handsome Boy 4th of Jerseyholm
Boisdale Marjorie ..	47293	20.11.36	11½	4,478	5·55	248·70	270	Jr. 3	181 ..	Boisdale Gladlip
Boisdale Netta	37385	30.9.36	5½	5,310	5·67	301·26	350	Mature	300, 365, 334	Boisdale Fox
*Boisdale Netta 2nd ..	38947	9.10.36	4	4,545	5·71	259·74	350	Mature	230, 320, 261	Gladiator of Springhurst
Boisdale Sparkle ..	28702	7.11.36	8	4,251	5·63	239·42	350	Mature	304, 367, 487, 406	Lord Island's Fancy of Brucevale
Boisdale Twilight ..	47297	13.10.36	7	4,013	5·63	225·99	250	Sr. 2	236 ..	Boisdale Dazzler
Pine Park Duchess 2nd ..	41579	10.12.36	8½	3,853	4·69	180·56	350	Mature	298, 334, 362, 421	Goronga Farm Jester
Pine Park Lady Choice 2nd	41580	3.11.36	10	4,367	5·25	229·24	350	Mature	341, 318, 383, 303	Goronga Farm Jester

* 240 days in test. † 243 days in test. ‡ 246 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire
Fraser, G. A., Addington, Ayrshire (5).										
*Bonnie Doon Bertha ..	26968	14.11.36	4	7,417	4·04	299·45	230	Sr. 3	257 ..	Glengowrie Masterpiece
Bonnie Doon Heatherbell ..	28138	4.10.36	23	7,254	4·83	350·60	230	Jr. 2	.. ..	Glengowrie Masterpiece
†Bonnie Doon Mermaid ..	28139	13.10.36	..	6,090	3·84	233·61	230	Jr. 2	.. ..	Glengowrie Masterpiece
Bonnie Doon Snowdrop ..	23467	9.10.36	28½	12,203	4·55	555·42	330	Sr. 4	381, 356 ..	Blair Athol Dream Boy
Glengowrie Ray	28468	8.11.36	31	14,895	5·33	794·49	350	Mature	297, 401, 663	Glengowrie Bold Baron
Gay, R. G. and Son,, North Devon, Jersey (2).										
‡Elm Grove Veronique ..	Vol. 24	20.12.36	5½	3,848	5·80	223·32	230	Jr. 2	.. ..	Elm Grove Starlight
Warenda Dal Monte 3rd ..	34023	26.10.36	15	8,676	5·31	461·04	350	Mature	398, 397, 471	Warenda Snap
Goddard, J. H., Jumbunna, Ayrshire (2).										
Donside Lydo Lady ..	23657	24.10.36	4	13,425	5·01	672·03	350	Mature	457, 622 ..	Olive Dale Chum
§Inverurie Olive Lady ..	27418	27.9.36	4	5,415	3·95	213·89	270	Jr. 3	251 ..	Oakbank Radio
Gregg, V., Whittlesea, Jersey (1).										
Stoneycroft Una 3rd ..	46210	26.9.36	18	7,886	5·02	395·80	350	Mature	341, 392 ..	Toorongo Mace
Handbury, J. E., and Son, No. 2 Farm, Toora, Jersey (2).										
Tooravale Clover 4th ..	55576	25.10.36	7	4,176	6·54	273·18	270	Jr. 3	205 ..	Tooravale Monica's Son
Tooravale Lassie Fowler 19th	Vol. 24	25.10.36	4½	3,232	5·42	175·12	230	Jr. 2	.. ..	Tooravale Monica's Son
Harvey, T., Bolsdale, Jersey (9).										
Jerseyholm Blue Bell 9th	25304	19.10.36	13½	8,100	5·11	413·87	350	Mature	361, 539, 494, 451, 466	Lord Island Fancy of Brucevale
Jerseyholm Blue Bell 15th	40373	28.9.36	20	8,223	5·49	451·21	310	Jr. 4	354, 389 ..	Werribee Master's Expert
Jerseyholm Blue Bell 18th	44479	19.10.36	16½	7,501	5·77	433·15	230	Sr. 3	371 ..	Werribee Master's Fox
Jerseyholm Blue Bell 19th	44480	5.11.36	10	5,645	5·53	312·45	270	Jr. 3	.. ..	Werribee Master's Fox
Jerseyholm Blue Bell 21st	53355	2.12.36	12	5,982	5·64	337·55	250	Sr. 2	273 ..	Werribee Master's Fox
Jerseyholm Empress 20th	34032	22.11.36	13½	5,424	5·54	300·73	350	Mature	360, 361, 268	Lord Island Fancy of Brucevale
Jerseyholm Empress 22nd	37506	4.10.36	23	7,983	4·76	379·94	350	Mature	344, 419, 393	Lord Island Fancy of Brucevale
Jerseyholm Empress 34th	40381	21.10.36	14½	5,901	5·70	336·41	310	Jr. 4	278, 291 ..	Werribee Master's Fox
Jerseyholm Lady Marge 11th	37513	11.10.36	22½	8,649	5·27	455·49	350	Mature	277, 379, 440	Lord Island Fancy of Brucevale
Haywood, Dr. A. R., Hastings, Jersey (1).										
Kyora Twinkle's Dream ..	49065	14.11.36	12	4,931	5·87	289·32	330	Sr. 4	177 ..	Kyora Adore's Volunteer
Henderson, W., Grasmere, Ayrshire (13).										
Carracoorte Balm 19th ..	27004	12.12.36	12	3,978	4·30	170·96	330	Sr. 4	278 ..	Carracoorte Kathleen's Pride
Carracoorte Belle 2nd ..	29201	29.10.36	7½	3,947	5·05	199·41	230	Jr. 2	.. ..	Grand View Bernie
Carracoorte Blanche 10th..	24676	27.10.36	6	6,563	5·10	334·41	350	Mature	255, 250, 331	Bluebell's Pride of Glencourt
Carracoorte Brownie 25th..	28169	12.11.36	15	4,427	4·58	202·67	290	Sr. 3	142 ..	Grand View Bernie
Carracoorte Bunty 22nd ..	27003	21.11.36	14	5,303	4·99	264·87	330	Sr. 4	304, 290 ..	Carracoorte Bluebell's Favorite
*Carracoorte Buttercup 4th	29205	14.11.36	4	2,625	5·05	132·60	230	Jr. 2	.. ..	Grand View Begonia's Hot Stuff
Carracoorte Fennella 16th	24689	5.10.36	10½	6,550	4·07	266·78	350	Mature	244, 325, 282	Bluebell's Pride of Glencourt
Carracoorte Filpail 20th ..	24690	21.10.36	10½	7,532	4·65	350·03	350	Mature	270, 444, 180	Carracoorte Lochiel
Carracoorte Jane 4th ..	29210	17.11.36	12½	3,419	4·53	154·81	230	Jr. 2	.. ..	Grand View Bernie
Carracoorte Maiden 4th ..	C.R.	27.10.36	14	4,424	4·89	216·24	270	Jr. 3	.. ..	Carracoorte Boomerang
Carracoorte Pearl 11th ..	23553	18.10.36	12	7,156	4·97	355·42	350	Mature	307, 394, 401, 458, 334	Carracoorte Lochiel
Carracoorte Rose Petal ..	24707	20.10.36	11½	6,051	4·82	291·37	350	Mature	242, 185, 340	Carracoorte Maiden's Laddie
*Carracoorte Viola 26th ..	C.R.	6.10.36	4	4,305	5·55	238·98	350	Mature	101, 251 ..	Carracoorte Pilot
Hercus, T. B., Hayanmi, Jersey (1).										
*Mologa Lucerne ..	Vol. 24	5.10.36	4	4,403	5·48	241·37	230	Jr. 2	.. ..	Belgonia Hinkler
Hore, E., Leitchville, Jersey (4).										
Melvue Lady Dilly's ..	Vol. 24	10.12.36	15	6,153	5·10	313·55	230	Jr. 2	.. ..	Glen Iris Lord Viola 2nd
Troed-Yr-Rhiw Bettwys ..	42205	14.10.36	22	10,631	4·73	502·39	350	Mature	490, 590 ..	Troed-Yr-Rhiw Masterpiece
Troed-Yr-Rhiw Cariad 2nd	50027	1.10.36	23	9,710	5·38	522·59	310	Jr. 4	360, 454 ..	Glen Iris Montrose Duke
View Banks Mikado's Dainty	Vol. 24	28.10.36	21	7,628	5·13	391·65	230	Jr. 2	.. ..	Werribee Mikado
Huffer, J. A., Gormandale, Jersey (5).										
Glen Valley Daffodil ..	Vol. 24	22.10.36	8	4,812	6·46	310·80	230	Jr. 2	.. ..	Glen Valley Mercedes Masterpiece
Glen Valley Verbena's Buttercup	40003	9.10.36	10½	6,918	6·07	419·86	350	Mature	407 ..	Glen Valley Buttermaker Boy
Glen Valley Violet ..	C.R.	23.11.36	14	4,868	6·05	294·41	310	Jr. 4	236 ..	Glen Valley The Don
Glen Valley Waverley Lass 7th	48445	30.9.36	7½	6,684	5·74	383·78	270	Jr. 3	305 ..	Brucevale Wyandotte's King
Melrose Mercedes ..	34038	23.10.36	8	6,303	5·64	355·91	350	Mature	327, 367, 321, 404, 372	Masterpiece (Imp.)

* 240 days in test. † 240 days in test (sold). ‡ 259 days in test. § 180 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.		Sire.
Hurrey, W. H., Koonwarra, Jersey (12).											
Burwood Mourier Belle ..	Vol. 24	3.10.36	13	5,606	6·45	361·59	270	Jr. 3	..	..	Columbine's Defiance of Linga Longa
Kooreena Audrey 6th ..	49030	30.9.36	13½	6,419	6·30	404·62	270	Jr. 3	331	..	Kooreena Carrie 3rd's Halo
Kooreena Audrey 7th ..	49031	12.11.36	14½	6,432	6·76	434·66	270	Jr. 3	343	..	Kooreena Carrie 3rd's Delegate
Kooreena Audrey 8th ..	49032	16.10.36	12½	5,123	7·50	384·23	250	Sr. 2	284	..	Kooreena Carrie 3rd's Delegate
Kooreena Audrey 9th ..	Vol. 24	20.11.36	17	5,573	5·58	311·05	230	Jr. 2	..	..	Kooreena Carrie 3rd's Halo
Kooreena Lady 6th ..	49035	20.11.36	17½	6,393	6·08	388·64	270	Jr. 3	294	..	Kooreena Carrie 3rd's Halo
Kooreena Lady 8th ..	Vol. 24	14.11.36	16½	5,351	5·93	317·17	230	Jr. 2	..	..	Kooreena Mourier King 2nd
Kooreena Maranta 11th ..	49036	8.11.36	13½	6,398	6·54	418·46	270	Jr. 3	310	..	Kooreena Carrie 3rd's Halo
Kooreena Minerva 6th ..	40587	2.12.36	18	6,134	6·33	388·36	350	Mature	..	..	Kooreena Carrie 3rd's Delegate
Kooreena Minerva 9th ..	53623	17.10.36	15½	7,155	6·23	446·04	310	Jr. 4	..	..	Columbine's Defiance of Linga Longa
Kooreena Mourier Queen 9th	49037	16.12.36	26	7,160	5·73	410·01	270	Jr. 3	311	..	Kooreena Carrie 3rd's Delegate
Kooreena Yo-Yo 2nd ..	Vol. 24	17.10.36	13	5,216	6·63	345·83	230	Jr. 2	..	..	Kooreena Mourier King 2nd
Leask, G. C., Garfield, Ayrshire (3).											
Dandy Bonnie Lass ..	29296	30.10.36	15	6,306	4·52	285·29	230	Jr. 2	..	..	Macsgwyn Prince Alfred (Imp.)
*Hazel of Glen Afton ..	13917	17.10.36	4	6,645	4·21	279·81	350	Mature	..	..	Helen's Prince of Glencira
†Thirlmere Adella ..	25531	27.9.36	4	6,195	4·42	273·74	350	Mature	..	..	Wayside Winalot
Longerenong Agricultural College, Dooen, Ayrshire (3).											
Longerenong Laurel 3rd ..	28679	29.10.36	7	5,139	4·12	211·74	230	Jr. 2	..	..	Dookie Punch
Longerenong Queen Wattle 3rd	28680	11.10.36	12	5,601	3·92	219·41	230	Jr. 2	..	..	Longerenong Noble
‡Longerenong Acacia Elata 2nd	26545	30.9.36	4	2,775	4·09	113·58	270	Jr. 3	..	..	Longerenong Noble
Banyule Pty. Ltd., Heidelberg, Jersey (13).											
Banyarra Silvermine ..	42876	14.10.36	14	7,506	5·20	390·51	350	Mature	351	..	Banyule Lord Silvair
Banyarra Silvermine 2nd ..	51647	24.10.36	18½	5,714	4·56	260·36	230	Jr. 2	..	..	Banyarra Velvetation
Banyule Dea	42881	20.10.36	12½	6,057	5·82	352·36	270	Jr. 3	325	..	Oxford Beau's Pretty Oxford (Imp.)
Banyule Ettie 18th ..	38796	19.11.36	19	7,083	6·14	435·05	310	Jr. 4	403	..	Banyule Triplane
Banyule Gipsy 2nd ..	42883	17.11.36	16½	6,465	5·02	324·67	270	Jr. 3	277	..	Banyule Supreme
Banyule Lotus Leaf ..	47119	30.11.36	16½	5,483	5·13	281·28	230	Jr. 2	..	..	Oxford Beau's Pretty Oxford (Imp.)
Banyule Molly 36th ..	34187	23.10.36	24	9,569	4·76	455·04	350	Mature	414, 498	..	Concentration of Banyule
Banyule Molly 44th ..	38800	28.11.36	22	7,719	4·66	359·70	310	Jr. 4	366, 392	..	Banyule Triplane
Banyule Molly 46th ..	42886	10.11.36	17½	6,945	5·55	385·19	270	Jr. 3	355	..	Banyule Airo
Banyule Molly 50th ..	47123	20.12.36	22	5,828	4·61	268·65	230	Jr. 2	..	..	Banyule Pitman
Banyule Tiddlewink's 9th	34198	6.11.36	22	7,982	4·96	396·14	350	Mature	314, 472, 448		Concentration of Banyule
Banyule Tiddlewink's 12th	38807	29.9.36	18½	8,544	5·18	442·98	330	Sr. 4	367	..	Banyule Lord Silvair
Gowanlea Oxford's Gipsy	37788	29.10.36	18½	7,271	5·04	366·68	350	Mature	324, 387, 488, 415		Oxford Beau's Pretty Oxford (Imp.)
Lyon, W. H., Sale, Jersey (10).											
Avon Blanchette 14th ..	Vol. 24	18.12.36	12	4,386	7·01	307·65	330	Sr. 4	..	..	Jessie 13th's Count of Melrose
Avon Countess	51571	27.11.36	11	5,510	5·45	300·39	270	Jr. 3	198	..	Bellefaire Blonde's Blondex
Avon Delphine	Vol. 24	28.9.36	6½	5,172	5·30	274·34	230	Jr. 2	..	..	Ruby's Beau (Imp.)
Avon Duchess	47069	22.10.36	10	7,223	5·16	373·01	290	Sr. 3	225	..	Bellefaire Blonde's Blondex
Avon Handsome Girl 3rd	38733	2.11.36	10	6,999	5·75	402·31	350	Mature	392, 398	..	Jessie 13th's Count of Melrose
Avon Lassie Fowler 10th ..	47071	26.10.36	7	4,902	5·54	271·63	330	Sr. 4	306, 326	..	Jessie 13th's Count of Melrose
Avon Lassie Fowler 15th ..	51575	18.10.36	10	5,903	5·01	295·76	270	Jr. 3	254	..	Studleigh Lord Madeira
Avon Little Nell 3rd ..	33458	28.11.36	14	8,112	5·29	428·95	350	Mature	382, 367, 390		Jessie 13th's Count of Melrose
Avon Little Nell 5th ..	38737	23.10.36	14½	7,800	5·44	424·21	350	Mature	397, 382	..	Jessie 13th's Count of Melrose
Avon Little Nell 6th ..	38738	28.10.36	12½	7,781	5·37	417·62	350	Mature	350, 448	..	Jessie 13th's Count of Melrose
Macauley, C. W., Rochester, Jersey (4).											
Taranah Flora 2nd ..	Vol. 24	5.11.36	14½	6,396	5·31	339·92	230	Jr. 2	..	..	Taranah Commander
Taranah Floss	37857	23.10.36	20	9,105	5·49	499·47	350	Mature	313, 399, 455, 530, 479		Duke of Invermay
Taranah Rainbow ..	42118	3.11.36	14½	7,560	5·66	427·79	350	Mature	343, 433, 425, 487		Duke of Invermay
†Taranah Rarity 2nd ..	Vol. 24	2.12.36	4	3,795	5·59	212·19	230	Jr. 2	..	..	Taranah Hercules
McCosh, S. J., Wandin North, Jersey (1).											
Mornmoot Modesty 5th ..	41128	26.9.36	14½	7,109	5·32	378·05	310	Jr. 4	362, 380	..	Werribee Prince Madeira

* 210 days in test. † 240 days in test. ‡ 150 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
McDougall, J. E., Byaduk, Jersey (3).										
Park View Flower Girl ..	54675	13.10.36	7½	4,437	5·01	222·22	230	Jr. 2	.. ..	Staghorn Fancy Observer 2nd
Park View Heather 2nd ..	45648	1.12.36	17⅔	5,381	5·29	284·86	310	Jr. 4	342, 302 ..	Grangelea Royal
Park View Nellie ..	41518	2.12.36	18½	5,646	5·37	303·32	350	Mature	344, 348, 305	Grangelea Royal
Maher, R. H., Tongala, Jersey (16).										
Rosemont Jenny Lind 7th	37875	8.10.36	8	5,767	5·71	329·02	350	Mature	340, 338, 394, 438, 382	Rosella 2nd's Noble of Rosemont
Rosemont Jenny Lind 9th	50456	10.10.36	12½	6,000	5·04	356·26	330	Sr. 4	343, 309 ..	Rosemont Laddie Fowler 3rd
Rosemont Jenny Lind 10th	55080	3.10.36	10	5,829	5·04	346·23	270	Jr. 3	224 ..	Rosemont Laddie Fowler 3rd
Rosemont Jenny Lind 11th	Vol. 24	22.12.36	14	3,807	4·72	179·73	230	Jr. 2	.. ..	Rosemont Golden Emblem
Rosemont Lady Fowler 5th	37876	11.10.36	13½	5,549	5·28	292·80	350	Mature	319, 317, 299, 345, 338	Rosella 2nd's Noble of Rosemont
Rosemont Lassie Fowler 11th	Vol. 24	9.10.36	9	4,085	5·81	237·28	230	Jr. 2	.. ..	Rosemont Golden Emblem
Rosemont Primrose 3rd ..	37879	7.11.36	16½	6,710	5·43	364·10	350	Mature	339, 191, 160, 357, 341	Lassie's Duke of Euranger
Rosemont Primrose 5th ..	Vol. 24	6.11.36	18	4,814	4·79	230·36	230	Jr. 2	.. ..	Rosemont Golden Emblem
Rosemont Silvermine ..	37880	22.10.36	10½	6,381	5·27	336·04	350	Mature	258, 260, 270, 334, 320	Rosella 2nd's Noble of Rosemont
Rosemont Silvermine 3rd	50462	5.10.36	7½	4,304	5·91	254·38	290	Sr. 3	208, 243 ..	Rosemont Laddie Fowler 3rd
Rosemont Lady Fowler 6th	41864	7.10.36	7½	4,832	5·83	281·55	350	Mature	305, 259, 344, 291	Rosella 2nd's Noble of Rosemont
Rosemont Lady Fowler 7th	50457	3.10.36	8	5,729	5·77	330·70	350	Mature	314, 303 ..	Troed-Yr-Rhiw Masterpiece
Rosemont Lady Fowler 9th	50459	17.11.36	15	5,477	5·31	290·69	290	Sr. 3	254, 239 ..	Duke of The Lake (Imp.)
Rosemont Lady Fowler 10th	55081	8.10.36	10	3,851	5·30	204·11	250	Sr. 2	.. ..	Rosemont Laddie Fowler 3rd
Rosemont Lady Fowler 11th	Vol. 24	26.12.36	8	2,979	4·89	145·74	230	Jr. 2	.. ..	Rosemont Golden Emblem
Rosemont Lady Fowler 12th	Vol. 24	6.11.36	14½	3,666	5·18	189·83	230	Jr. 2	.. ..	Rosemont Laddie Fowler 3rd
Maloney, P. J., Tongala, Jersey (4).										
*Belgonia Design's Peggy 13th	51702	7.11.36	4	4,425	5·06	223·80	230	Jr. 2	.. ..	Design's Ruler (Imp.)
Belgonia Design's Perroe ..	42920	10.10.36	17	8,801	5·33	469·31	310	Jr. 4	387, 438 ..	Design's Ruler (Imp.)
Belgonia Junette 2nd ..	47152	9.10.36	13½	6,609	6·03	398·77	250	Sr. 2	350 ..	Duke of The Lake (Imp.)
Leven Brae Perroe's Girl ..	34002	9.10.36	20½	9,731	5·60	544·64	350	Mature	412, 515, 573, 513, 514	Werribee Gaypiece
Masters, S. H., Swan Hill, Jersey (1).										
†Rutland Brunette 4th ..	50522	4.10.36	..	9,330	4·57	426·60	310	Jr. 4	399, 473 ..	King's Vale Monica 23rd's Lad
Meaklim Bros., Mooroopna, Dairy Shorthorn (5).										
Drumneil Duchess 2nd ..	D.S.H.B.	30.9.36	17	8,642	3·76	324·56	350	Mature	314 ..	Bounty of Darbalara
Drumneil Duchess 3rd ..	D.S.H.B.	3.10.36	26	12,363	3·57	441·45	350	Mature	374, 425 ..	Bounty of Darbalara
Drumneil Fairy 2nd ..	D.S.H.B.	16.10.36	10	8,545	3·94	336·97	330	Sr. 4	351 ..	Willow Park Reformer
Drumneil Queenie ..	D.S.H.B.	24.10.36	26	10,443	4·41	461·04	350	Mature	425, 424 ..	Willow Park Rosemont
Drumneil Roany 2nd ..	D.S.H.B.	3.10.36	16	9,599	4·13	396·88	330	Sr. 4	370 ..	Willow Park Reformer
Moore, J., and Co., Yarram, Jersey (5).										
Rydon, Onyx 2nd ..	41927	12.11.36	11⅓	5,477	4·98	272·58	350	Mature	306, 348 ..	Melrose Migrant
Tooloonook Antimony's Bessie 4th	55569	16.10.36	N.O.C.	5,112	4·64	237·12	330	Sr. 4	216, 220 ..	Tooloonook Carob's Hero
Tooloonook Maiden 4th ..	50885	1.11.36	6	6,215	4·55	282·65	290	Sr. 3	231, 162 ..	Heroic of Somerville
Tooloonook Trixie 13th ..	46473	19.10.36	4½	7,532	4·83	363·99	350	Mature	260, 310, 243	Tooloonook Plumbago's Hero 2nd
Tooloonook Trixie 18th ..	55574	16.10.36	N.O.C.	5,858	5·19	303·77	270	Jr. 3	236 ..	Tooloonook Peach's Noble
Murdoch, J. T., and Son, Lismore, Jersey (2).										
Ismalia Petal	Vol. 24	18.10.36	10	3,735	5·82	217·22	230	Jr. 2	.. ..	Murona Twylair
Murona Garenne ..	54325	27.9.36	14	5,351	5·83	312·17	250	Sr. 2	.. ..	Banyule Airpoise
Nancarrow Bros., Kerang, Jersey (3).										
Ballara Beauty 2nd ..	29537	5.12.36	11	6,522	6·06	395·10	350	Mature	299, 388, 388, 393, 493, 397	Werribee Madeira Cream's Masterpiece
Pine Ridge Countess ..	50167	5.12.36	11	5,792	6·15	356·36	290	Sr. 3	281, 309 ..	Bellaire Count
Pine Ridge Wattle ..	54756	22.11.36	5	6,164	4·77	294·19	250	Sr. 2	232 ..	Pat of Belgonia
Nicholas, M. A., Sherbrooke, Jersey (5).										
Brampton Standard Dream 2nd (Imp.)	56047	9.12.36	18½	6,116	5·85	357·65	230	Jr. 2	.. ..	Brampton Sporting Standard
‡Jubilee Dillwynia ..	38341	31.10.36	4	8,066	4·62	372·76	350	Mature	263, 309, 347	Jubilee Whatlight
Jubilee Waterlily ..	33796	5.11.36	12½	7,641	5·70	435·46	350	Mature	270, 319, 369, 396, 343	Jubilee Whatlight
Selsey Design's Wyandotte	46130	26.10.36	7	5,135	5·88	302·01	310	Jr. 4	314, 385 ..	Design's Ruler (Imp.)
Selsey Weigelia	55214	17.12.36	12½	4,722	6·57	310·07	250	Sr. 2	295 ..	Brampton Great Boy (Imp.)

* 240 days in test. † 240 days in test (sick). ‡ 257 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Noble, T. M., and Sons, Maffra, Jersey (3).										
Finchley Handsome Girl ..	39740	27.10.36	16	6,866	7·11	488·40	350	Mature	413, 450 ..	Werribee Lord Burnham
Finchley Lady Peerless 2nd	Vol. 24	14.12.36	17	5,481	6·42	351·90	230	Jr. 2	.. ..	Finchley Lord Harmony
Linga Longa Wattle Speck	25571	30.9.36	20	9,594	5·43	521·31	350	Mature	317, 373, 410, 492, 558, 468, 480, 499	Canary's Handsome Boy of Linga Longa
O'Neill, J., Echuca Village, Jersey (3).										
Ballara Bluebell 4th ..	38007	12.10.36	15	8,019	5·25	421·08	350	Mature	419, 517, 519, 431	Brucevale Lord Fancy Madeira
*Fourshell's Heroine 2nd	38346	20.11.36	4	5,861	5·48	321·39	350	Mature	352, 333, 330, 316	Belgonia Propeller
Ullina Violet	Vol. 24	8.12.36	19	6,225	4·69	292·18	230	Jr. 2	.. ..	Ballara Fancy's King
Overend, Mrs. A. C., Sale, Jersey (3).										
Bon Accord Belle 2nd ..	38948	18.11.36	12½	5,033	5·11	257·29	350	Mature	173, 239, 309, 255	Bon Accord John
Bon Accord Meg ..	C.R.	1.12.36	18½	4,698	4·92	231·17	350	Mature	165, 334, 272	Bon Accord John
Bon Accord Princess Carmen 2nd	47302	5.10.36	4	6,137	4·80	294·50	310	Jr. 4	347, 259 ..	Bon Accord John
Parks, L. A., and Sons, Romsey, Guernsey (1).										
*Torwood Gem	6411	3.10.36	4	2,970	6·51	194·37	230	Jr. 2	.. ..	Melbourne Golden Sequel
Pattison, F., Tongala, Ayrshire (3).										
Willow Park Marie ..	26808	8.10.36	6	8,879	3·62	321·38	310	Jr. 4	337, 280 ..	Willow Park Prince
Willow Park Rosebud ..	Vol. 29	24.12.36	20½	6,563	4·08	267·87	230	Jr. 2	.. ..	Fulham Beam
Willow Park Rosie ..	23314	8.11.36	14	9,492	3·59	341·03	350	Mature	248, 308, 349, 374	Willow Park Prince
Payne, A. E. T., Lilydale, Guernsey (5).										
Yarraview Essie ..	5169	7.11.36	23	7,539	4·58	345·64	270	Jr. 3	292 ..	Camellia's Majestic of Maple Lodge (Imp.)
Yarraview Jennie ..	5172	13.11.36	19½	8,639	5·57	480·87	290	Sr. 3	402 ..	Camellia's Majestic of Maple Lodge (Imp.)
Yarraview Lady	5174	4.10.36	8	7,501	4·34	325·70	310	Jr. 4	246 ..	Camellia's Majestic of Maple Lodge (Imp.)
Yarraview Souvenir ..	3568	28.9.36	11½	5,957	4·87	290·24	330	Sr. 4	517 ..	Camellia's Majestic of Maple Lodge (Imp.)
Clara's Fashion 7th (Imp.)	6652	27.9.36	15½	9,405	4·67	439·07	290	Sr. 3	400 ..	Sunrise of Maple Lodge
Phillips, J. H., Speewa, Jersey (2).										
Peri Vanilla 7th	54746	1.12.36	22	7,517	4·79	360·00	310	Jr. 4	339 ..	Leahurst Royal Rover
Ryeland's Sweet Lavender	Vol. 24	18.11.36	11	4,068	5·71	232·46	250	Sr. 2	.. ..	Orphanage Zaffarine's Prince
Powell, T. S., Mansfield, Jersey (2).										
Mornmoot Northwood Madeira 3rd	41129	5.11.36	17	8,097	5·56	450·11	310	Jr. 4	.. ..	Werribee Prince Madeira
Wompini Starbright ..	Vol. 24	3.12.36	17½	5,966	6·21	370·63	250	Sr. 2	.. ..	Werribee Butter King
Raleigh, Miss H. E., Pakenham Upper, Jersey (5).										
Bellefaire Postmaster's Bijouette	35256	1.12.36	9	5,817	5·29	308·01	350	Mature	326, 384, 308	Napoleonette's Postmaster of Rosel (Imp.)
Goronga Farm La Mode ..	Vol. 24	9.12.36	13	3,677	5·05	218·95	230	Jr. 2	.. ..	Somerville Reputed King
Goronga Farm Satisfaction's Comet	Vol. 24	1.10.36	9	4,226	5·53	233·76	230	Jr. 2	.. ..	Werribee Reprieve
Goronga Farm Starbright's Satisfaction	Vol. 24	14.12.36	13	4,605	5·17	238·09	250	Sr. 2	.. ..	Werribee Reprieve
Mornmoot Modesty 2nd ..	33138	6.10.36	11½	6,926	5·28	365·60	350	Mature	381, 524, 543, 412, 375	Choirmaster of Banyule
Richardson, W. S., Bacchus Marsh, Jersey (6).										
Clarendon Eyre Waltz Dream	33953	2.10.36	14½	7,013	5·48	384·02	350	Mature	368, 452, 447, 494, 448	Eminent's Achievement of Clarendon Eyre
Sutton Lea Airmite ..	38135	4.10.36	14½	7,469	5·18	387·21	350	Mature	294, 393, 345, 309	Banyule Petalon 2nd
Sutton Lea Lu Lu ..	55361	24.11.36	13	4,715	5·26	248·16	250	Sr. 2	232 ..	Sutton Lea Garnap
Sutton Lea Marie ..	55363	25.10.36	9½	5,013	5·53	327·17	270	Jr. 3	233 ..	Sutton Lea Garnap
Sutton Lea Pariel 3rd ..	50726	11.10.36	13	5,877	6·54	384·30	310	Jr. 4	315 ..	Sutton Lea Garnap
Sutton Lea Petal ..	46286	4.12.36	11½	5,213	6·24	325·55	330	Sr. 4	261, 272 ..	Banyule Petalon 2nd
Salesian College, Sunbury, Ayrshire (1).										
†Rupertswood Carnation ..	26722	24.10.36	4	6,060	4·06	245·94	330	Sr. 4	295 ..	Rupertswood Billy
Salesian College, Sunbury, Friesian (2).										
Ingolston Bonnie Bess ..	4090	19.12.36	24½	11,574	3·79	438·99	350	Mature	258, 307, 305	Greenvale Ideal Segis
Tulla Pontiac Lady ..	C.R.	26.11.36	33	11,210	3·75	420·58	350	Mature	372 ..	Clarendon Eyre Inka Pontiac
Sebire, T., Wandin North, Jersey (3).										
Wandin Daphne	55755	13.11.36	14½	5,822	5·24	305·02	270	Jr. 3	234 ..	St. Alban's Lilac's Supervisor
‡Wandin Freda 2nd ..	55757	28.11.36	..	6,063	4·53	373·06	350	Mature	.. ..	St. Alban's Lilac's Supervisor
Wandin Madeira's Queen ..	55758	27.10.36	8½	5,730	5·05	289·49	270	Jr. 3	244 ..	Leven Brae Kingdom

* 240 days in test. † 210 days in test. ‡ 240 days in test (sold).

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.		Sire.
Shearman, A. and W., Darnum, Jersey (3).											
Darnum Park Leonie ..	C.R.	14.10.36	6	4,074	5·70	232·25	230	Jr. 2	..	..	Darnum Park Starbright's Masterpiece
Darnum Park Royal Duchess	C.R.	25.10.36	11	4,663	5·67	264·43	230	Jr. 2	..	..	Darnum Park Starbright's Masterpiece
Darnum Park Sweet Rose ..	C.R.	1.12.36	9½	4,424	6·42	284·21	230	Jr. 2	..	..	Darnum Park Starbright's Masterpiece
Smith Bros., Mirboo North, Jersey (13).											
Sylvan Hill Bluebell ..	50735	14.10.36	17½	7,928	5·10	401·67	310	Jr. 4	345, 321	..	Somerville Heir Apparent
Sylvan Hill Bonnie Mary ..	55377	14.10.36	9½	6,798	6·02	409·30	270	Jr. 3	301	..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Buttercup ..	46299	6.10.36	12½	7,557	5·59	422·50	350	Mature	256, 373	..	Somerville Heir Apparent
Sylvan Hill Countess ..	38278	22.10.36	13	7,229	5·18	374·42	350	Mature	443, 379, 384, 367		Somerville Heir Apparent
Sylvan Hill Duchess ..	50736	2.10.36	13½	7,800	5·47	426·72	350	Mature	409, 350	..	Somerville Heir Apparent
Sylvan Hill Lady Grey ..	Vol. 24	17.11.36	7½	4,226	6·08	256·82	230	Jr. 2	..	..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Lorna ..	42092	18.12.33	11	4,950	6·52	322·91	350	Mature	312, 307, 334, 321		Somerville Heir Apparent
Sylvan Hill Meadow Queen	55381	29.9.36	9	6,101	5·71	348·42	270	Jr. 3	243	..	Handsome Boy 3rd of Jerseyholm
Sylvan Hill Primrose ..	38284	13.10.36	8	6,788	5·56	377·50	350	Mature	392, 376, 460, 428		Somerville Heir Apparent
Sylvan Hill Sunlight ..	55383	15.12.36	13	5,178	5·84	302·23	270	Jr. 3	264	..	Sylvan Hill Starlight's Pride
Sylvan Hill Sunshine ..	55384	7.11.36	14½	5,924	5·32	315·29	270	Jr. 3	290	..	Sylvan Hill Starlight's Pride
Sylvan Hill Vanity ..	50740	1.12.36	12½	7,287	5·12	373·39	310	Jr. 4	321, 309	..	Somerville Heir Apparent
Sylvan Hill Waterlily ..	38287	3.10.36	11	6,393	5·43	347·11	350	Mature	387, 348, 370, 304		Somerville Heir Apparent
Stephens, Dr. F., Vermont, Guernsey (2).											
Road's End Antoinette ..	3409	9.11.36	20	7,632	5·21	397·87	330	Sr. 4	..	..	Glenburnie Ideal (Imp.)
Vermont Una's Princess ..	5188	20.10.36	10	7,882	5·16	406·71	270	Jr. 3	339	..	Camelia's Majestic 2nd of Maple Lodge (Imp.)
Stirling, H. V., Meade, Jersey (1).											
Coimbra Silvermine ..	Vol. 24	24.11.36	18	7,202	4·70	338·49	230	Jr. 2	..	..	Banyule Triplane
Stoney, W. B., Drouin West, Jersey (7).											
Tarago Bonnie	50767	4.10.36	11½	5,357	4·75	254·44	310	Jr. 4	210, 211	..	Glenesk Eminent's Lightnin 2nd
Tarago Bonnie 2nd ..	Vol. 24	18.10.36	4	3.002	5·73	172·12	230	Jr. 2	..	..	King's Vale Dolly 4th's Son
Tarago Foxglove 5th ..	Vol. 24	7.10.36	9½	3,590	5·05	181·12	230	Jr. 2	..	..	Tarago Handsome Boy
Tarago Gem 2nd ..	55420	4.10.36	11½	6,025	4·21	253·95	310	Jr. 4	252	..	King's Vale Dolly 4th's Son
Tarago Gem 4th	55422	24.10.36	14	4,164	5·12	213·23	270	Jr. 3	184	..	Glenesk Eminent's Lightnin 2nd
Wompini Grannie's Gem ..	33803	11.10.36	7½	6,774	4·61	312·17	350	Mature	234, 244, 269		Werribee Masterman
Tarago Wildflower 3rd ..	Vol. 24	3.10.36	10½	4,895	6·11	299·27	270	Jr. 3	..	..	Glenesk Eminent's Lightnin 2nd
Thomas and Taylor, Hamilton, Ayrshire (1).											
Carracoorte Viola 28th ..	27014	9.11.36	14½	7,014	4·88	342·09	310	Jr. 4	288, 310	..	Carracoorte Blue Bell's Favorite
Trewin, J. V., Nathalia, Jersey (1).											
Weir View Greeting's 2nd	51163	3.11.36	14	6,794	5·08	345·27	250	Sr. 2	238	..	Belgonia Milk Lad
Vagg, E. J., Leongatha, Jersey (2).											
Bonnay Mystery's Lilac ..	Vol. 24	15.10.36	11	5,072	6·22	315·69	230	Jr. 2	209	..	Bonnay Love's Masterman
Bonnay Queen's Dulcie ..	Vol. 24	26.10.36	13	4,809	5·94	285·71	230	Jr. 2	..	..	Jerseyinn Edith's Masterpiece
Vaughan Bros., Girgarre, Jersey (4).											
Lynroy Beta	53000	21.11.36	23	9,714	5·31	516·07	330	Sr. 4	422, 432	..	Werribee Laverock
Lynroy Glady's 2nd ..	38462	22.10.36	15½	7,937	5·14	408·20	350	Mature	372, 398, 398, 526, 452		Sherborne Wyandotte King
Lynroy Lynette	49303	24.12.36	18	7,707	5·53	426·23	330	Sr. 4	405	..	Werribee Laverock
Lynroy Pixie 2nd ..	49305	30.9.36	22½	10,209	6·01	619·25	310	Jr. 4	468, 267	..	Werribee Laverock
Wade, W. J., Stratford, Jersey (5).											
Inverbroom Empress 2nd ..	48762	3.11.36	14½	8,244	4·56	375·77	270	Jr. 3	350	..	Economist of Aveley
Inverbroom Silver Empress	48764	1.10.36	11½	7,860	4·60	362·19	270	Jr. 3	304	..	Inverbroom Lord Emperor
Inverbroom Silvermine Marie	44392	11.10.36	9½	8,746	5·66	495·06	310	Jr. 4	429, 455	..	Economist of Aveley
Inverbroom Silver Molly ..	40289	20.12.36	12	5,271	5·33	280·92	350	Mature	219, 305, 344		Economist of Aveley
Inverbroom Silver Muriel 2nd	38483	19.10.36	11½	8,817	4·55	401·47	350	Mature	346, 379, 433, 119		Economist of Aveley
Walker, C. S., Swan Hill, Friesian (2).											
Warwick Maggie Woodcrest	C.R.	11.12.36	38	10,887	3·23	351·67	290	Sr. 3	265	..	Greenvale Woodcrest Oakwood 2nd
Warwick Plebe Canary] ..	C.R.	23.12.36	24	10,158	3·18	323·39	350	Mature	256, 340, 400		Greenvale Woodcrest Oakwood 2nd

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Walker, C. S., Swan Hill, Jersey (1).										
Warwick Bell Bird 3rd ..	55799	25.10.36	21	8,189	4·35	356·11	310	Jr. 4	300 ..	Preston Star King
Warragul High School, Warragul, Red Poll (6).										
Gipps Lady Joan	4626A	19.11.36	6½	3,003	4·23	127·05	230	Jr. 2	.. ..	Blackwood Butler
*Gipps Marie	2878A	28.11.36	4	6,210	3·90	242·28	350	Mature	241, 209, 412, 306	Woodburn Laureate
*Gipps Musette	4631A	11.11.36	4	4,185	3·88	162·21	230	Jr. 2	.. ..	Naranghi Wizard
Gipps Veau	4632A	15.12.36	7	3,464	4·25	147·32	230	Jr. 2	.. ..	Naranghi Wizard
*Gipps Winga	7128A	24.10.36	4	4,110	4·93	202·47	250	Sr. 2	113 ..	Naranghi Wizard
*Gipps Zora	2883A	13.10.36	4	7,643	3·66	280·05	350	Mature	237, 266, 370, 303	Woodburn Laureate
Williams, F. A., Bamawm Extension Jersey, (4).										
Ballara Bonnie	33911	7.10.36	24	9,536	6·45	615·20	350	Mature	402, 565, 629, 634, 691	Brucevale Lord Fancy Madeira
Ballara Garenne's Fancy 6th	38780	17.10.36	33	9,623	6·32	608·03	350	Mature	441 ..	Brucevale Lord Fancy Madeira
Bamawm Princess Pamelia	47103	2.11.36	8	6,853	6·05	414·73	310	Jr. 4	386, 404 ..	Bamawm Leon
Mornmoot Mascot ..	28555	2.12.36	8½	6,917	5·13	354·75	350	Mature	414, 450, 455, 406, 487	Koomangoonong Prince Nephetos
Wilson, A., Port Fairy North, Ayrshire (7).										
Carracoorte Balm 11th ..	19679	3.10.36	4	7,730	4·61	356·62	350	Mature	90, 388, 363	Gerty's Producer of Carracoorte
Carracoorte Bellona 22nd	28165	5.10.36	11	6,083	4·32	263·05	250	Sr. 2	.. ..	Carracoorte Boomerang
Carracoorte Brownie's Petunia	29203	28.11.36	17½	5,282	4·37	231·03	230	Jr. 2	.. ..	Carracoorte Boomerang
Carracoorte Bunty 13th ..	19688	25.12.36	19	7,212	4·03	290·44	350	Mature	295, 212, 307	Blue Belle's Pride of Glencourt
Carracoorte Fuchsia 11th ..	28172	5.10.36	9	4,718	4·69	221·36	230	Jr. 2	.. ..	Grandview Bernie
Carracoorte Iris 26th ..	29209	23.10.36	10	5,384	4·10	220·87	270	Jr. 3	.. ..	Grandview Bernie
Carracoorte Viola 34th ..	29211	14.10.36	6	6,204	3·99	247·34	230	Jr. 2	.. ..	Grandview Bernie
Wood, J. V. M., Heidelberg, Jersey (1).										
†Lily Christabel (Imp.) ..	33958	30.10.36	..	8,130	5·27	428·46	350	Mature	360, 469, 456, 554	Oxford Sultan Observer

* 240 days in test. † 240 days in test (herd withdrawn).

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2	Warragul High School	Warragul ..	35				
3	Payne, A. E. T. ..	"Yarra View," Lilydale	80	8	Reid, Ralph G. ..	"Holmwood," Koo-wee-rup	99
4	Dennis, Mrs. A. A. ..	Frankston ..	14	9	Harris, J. W. ..	"Rowena," Clyde	72
5	Slaney, H. B. ..	Mornington ..	85				
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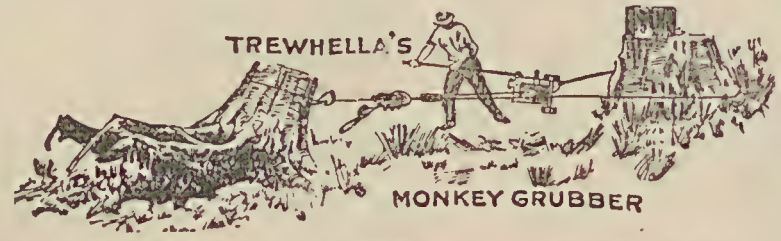

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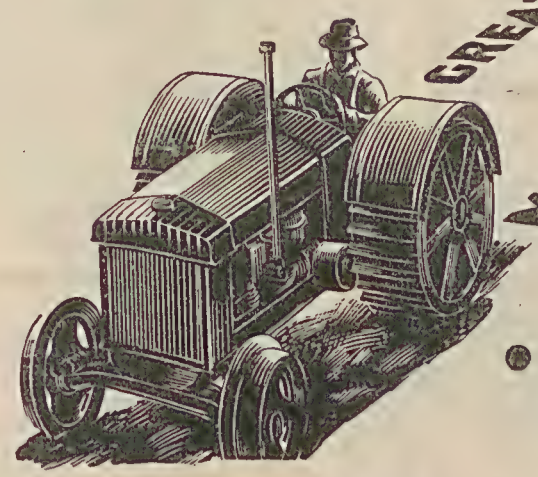

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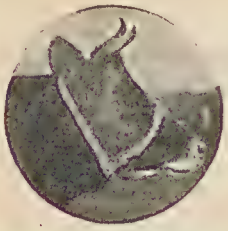

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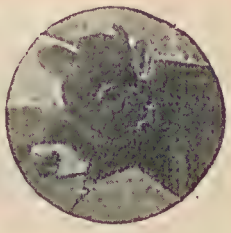

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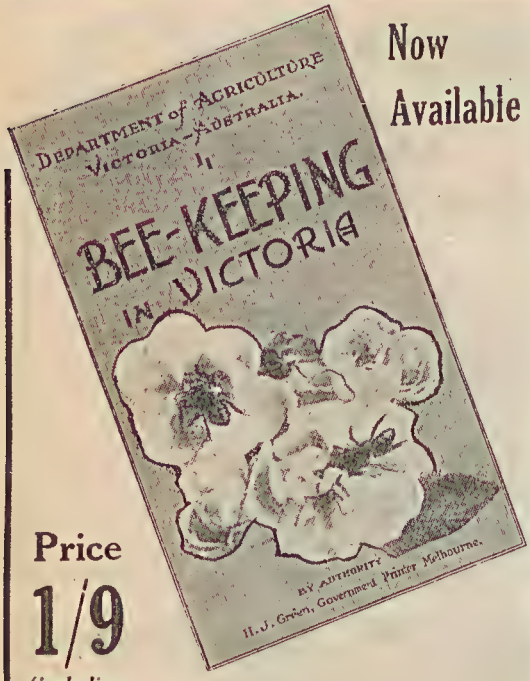

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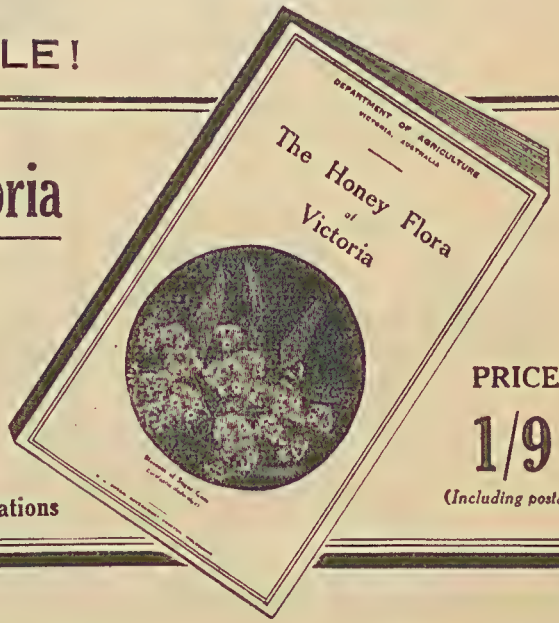

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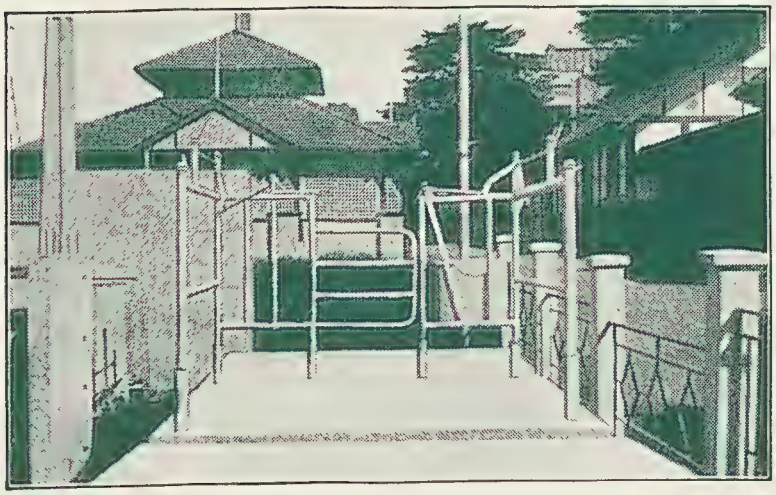

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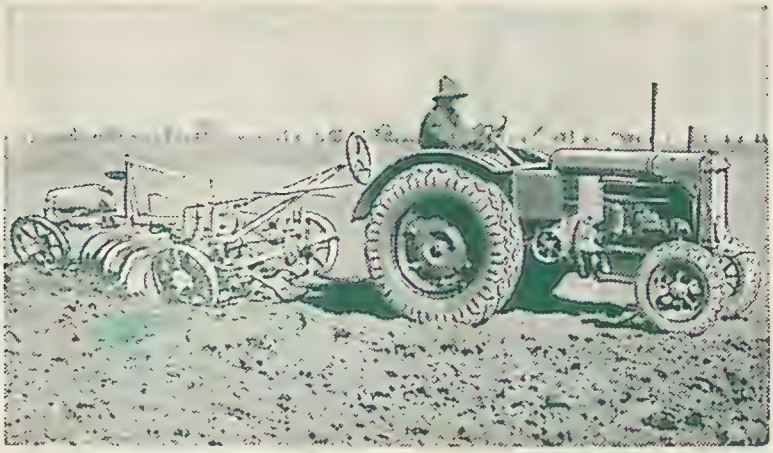

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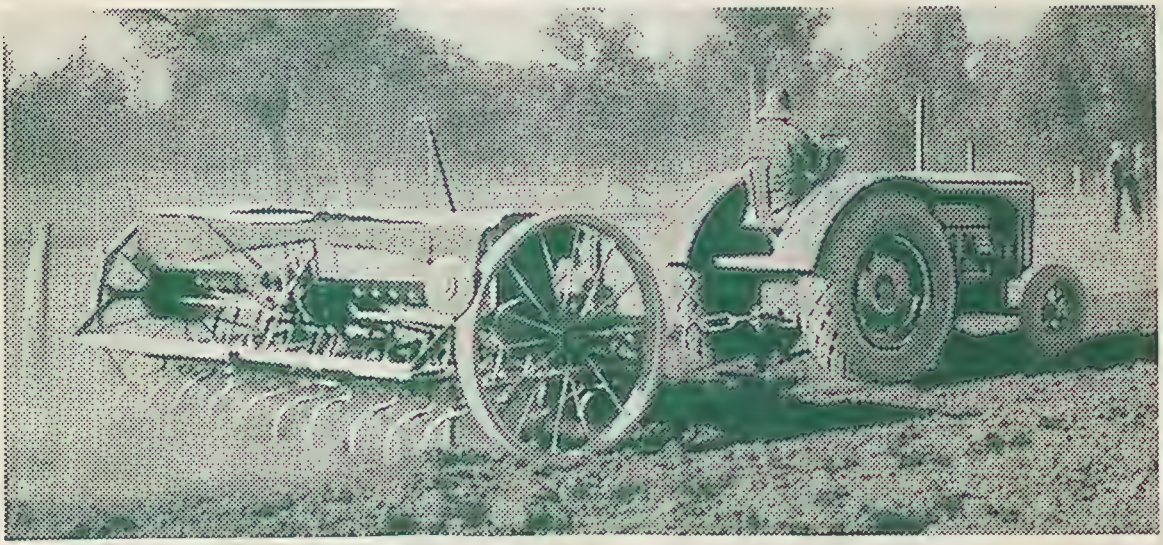

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VOLUME XXXV.

1937.

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H. J. Green, Government Printer, Melbourne.

SP
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